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# Industrial FINISHING

W. H. ROHR, Editor  P. C. BARDIN, Associate Editor

# Contents

**JUNE, 1948**
**Vol. XXIV, No. 8**

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Distributed monthly to finishing room and paint shop foremen, production superintendents, chemists, purchasing agents and company executives of metal-working, woodworking and miscellaneous industrial plants where production cleaning and finishing are major operations in parts and products manufacture.

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24 TWENTY-FOURTH YEAR OF PUBLICATION

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## WITH THE "Thermatic" SPRAY PAINTING UNIT

FOR APPLYING HIGH SOLID CONTENT LACQUERS AND SYNTHETICS AT ELEVATED TEMPERATURES

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### One Coat Finish

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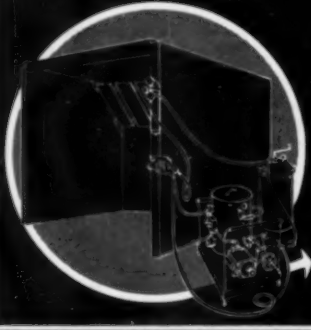
- SAVES MATERIAL
- ELIMINATES BLUSHING AND BLOOMING TROUBLES
- CUTS REJECTIONS

The THERMATIC Spray Unit heats the material being sprayed to the proper temperature required and maintains constant circulation of the material for perfect finishing results. When sprayed hot, material levels out to a smoother, more uniform finish equal to two or more coats by ordinary methods, since a greater film thickness can be applied without danger of sagging. Fully dependable and fool-proof, with every conceivable safety factor BUILT-IN.



### CONSTANT CIRCULATION

Assures minimum temperature drop at the Spray Gu and prevents overheating of the material being sprayed

### EXPLOSION PROOF

All electrical equipment is explosion proof and full approved by Underwriter's Laboratories and Fire Insur ance Underwriters.

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**GRAND RAPIDS VARNISH CORPORATION**

GRAND RAPIDS, MICHIGAN

*Makers of the Famous* Guardsman Finish

**Selling.** For the first time in many years marketing and selling, as a factor in business planning, has increased in many industries to a point where it is of greater importance than production or finance. Demands for new products, creation of new outlets, and customer preferences changed from what they were formerly, are largely responsible. Progressive concerns realize that some sales techniques must be readjusted because "we are not selling the same thing to the same people".

* * *

**Synthetic Liquid Fuel.** Koppers Co., Inc., has started engineering work on a large government demonstration plant for making synthetic liquid fuels at Louisiana, Mo.

In making synthetic liquid fuels from coal, the coal first is gasified in the presence of oxygen and steam to produce a synthesis gas, consisting essentially of carbon monoxide and hydrogen. Synthesis gas then is purified to remove sulfur and other impurities, and the gas is converted to liquid hydrocarbons by a special method.

* * *

**Protection and Decoration.** Paint, varnish and lacquer products protect the wealth of this country, for without them, metal would rust and wood decay. It is conservatively estimated that in the U. S. alone, paint, varnish and lacquer save the American public 3½ billion dollars a year by preventing needless destruction of wood and metal. But paint, varnish and lacquer products do more than that. They conserve health as well as property, and bring happiness and cheer to millions of people in the form of beautifully decorated homes, automobiles, and various other products.

* * *

**Furniture Show Dates.** Furniture retailers, backed by some manufacturers, are seeking to have the Chicago furniture show dates moved up about ten days. January 3 and July 5 are inconveniently close to our two National holidays, New Years and Independence Day. Both buyers and sellers must leave home either on or before the holidays to attend opening day, especially from distant points. If a majority of retailers and manufacturers want the show dates changed, they should be changed.

* * *

**Patterned Aluminum.** A new aluminum sheet, produced by a roller-die process, is available. The new sheet is designed for decorative effect, to expand its application, to increase strength and reduce fabricating costs. The decorative patterns include squares, diamonds, stucco, simulated leather grain, lengthwise and crosswise ribs. The last two provides a stiffening effect and increased strength.

The embossed patterns reinforce the sheet and increase its structural strength to such a degree that aluminum can replace steel of equal thick-

ness and retain the original rigidity. The decorative patterns have a tendency to hide scratches and other evidence of rough usage and wear. Patterned aluminum should provide a fertile field for designers and finishers, as well as others who seek new uses for aluminum.

* * *

**New Synthetic Varnish.** At a recent meeting of the American Chemical Society, announcement was made of a new completely synthetic varnish. It was brought out that all previous synthetic varnishes and enamels contain linseed oil or some other natural oil. A new petroleum chemical, glycerol allyl ether is used in the new varnish. It is said to form an insoluble film.

* * *

**Color Eye** said to be accurate to within 0.5% will eliminate color matching with the human eye. For measuring surface gloss a combination of diffuse and direct illumination is available at the best angle of illumination recommended by color authorities. A meter having two ranges indicates color differences. Accurate luminosity may be obtained by a direct reading, micrometer controlled optical slit by comparison to a white standard.

This instrument should prove valuable to paint manufacturers and in industrial plants where repeat orders specify duplication of colors, and where samples are submitted for matching. This device provides definite, standardized color matching.

* * *

**Korina,** a light colored hardwood is being extensively substituted for prima vera or white mahogany. The latter is scarce, therefore high priced. Korina, a native of Africa, is about half the price of prima vera. It is reported that one company plans to import 6½-million feet per month. Out

TECHNICAL DATA • FLASH UNDERCOATER #7 WHITE

DRYING
... to touch, 7 minutes
... to handle 10-15 minutes
... to sand 20-30 minutes
... to recoat 30 minutes

DURABILITY
..... Excellent

ADHESION
..... Excellent

TOUGHNESS
..... Extremely tough

WATER RESISTANCE
... Immersion in boiling water, 1 hour — No failure
... Immersion in cold water, 96 hours — No failure

REDUCTION: 33⅓%
with Naptha for spray application

Write for information about FLASH #7 Enamels and Clears. Available in Satin and Gloss. They too dry faster than ordinary synthetics.

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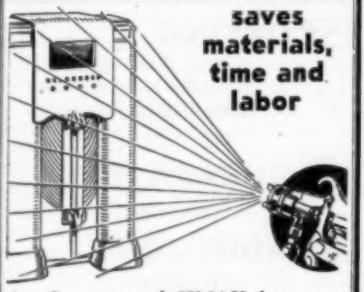
**saves materials, time and labor**



One coat of SIMAX lacquer, formulated specifically for heating, does the work of two coats of cold lacquer, saving material, time and labor.

SIMAX lacquer has body equal to varnish, and produces an exceptionally tough film with great durability. When heated it sprays on easily, has greater flow and better flow.

SIMAX

THE FINISH THAT LASTS

*Originators of "hot" lacquers, Wabash Products Company now offers improved materials formulated to meet today's requirements. Let us demonstrate!*

**WABASH PRODUCTS COMPANY**

*Lacquers • Enamels • Sealers • Stains Fillers • Varnishes • Thinners Synthetics • Wrinkles*

**16th and Hulman Streets Terre Haute, Indiana**

of this, 4½-million feet will be cut into fine face veneers, the balance into lower grades for backs, drawer bottoms and less expensive plywood.

* * *

**Jamestown Furniture.** At the recent 31st annual show in this furniture town, increased interest was manifest on French Provincial designs. Ultra modern occasional pieces included coffee tables with fold over tops flanking copper inserts for floral arrangements. Bedroom furniture in maple, oak and mahogany were shown. Reproductions of period pieces were prominently displayed.

* * *

**Timber for Tomorrow.** The Northeastern Lumber Mfrs. Association is to be commended for taking a definite and positive stand on conservation of timber in the eight States represented. A committee will be set up to evolve a plan to put logging operations on a sustained yield basis. To avoid the spectre of Government control of timber cutting and increased Government timber holdings, this association plans to take suitable action to see that reforestation equals or exceeds the yearly cut.

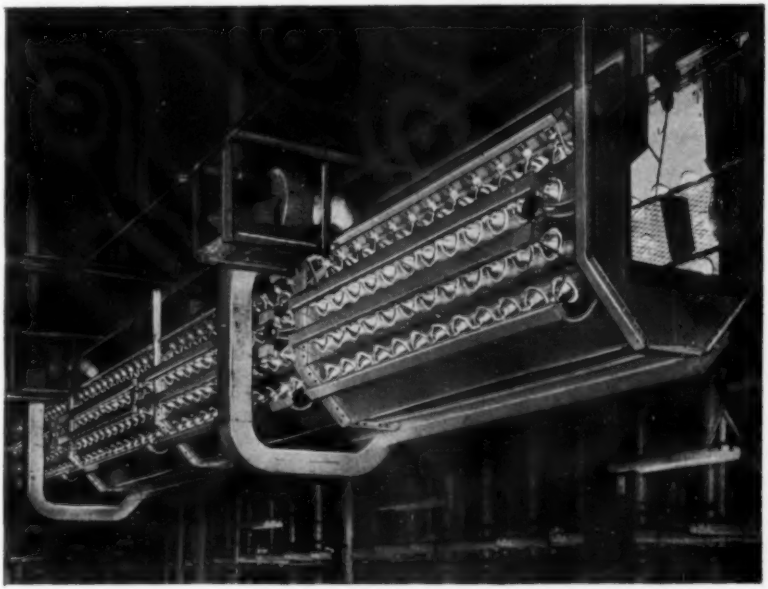
* * *

**China.** Adrian D. Joyce, founder and chairman of the Glidden Co., has returned to his desk from a 40-day trip to the Orient with the impression that many industrialists in China think their country would progress more rapidly without American money.

"These Chinese feel that American money merely finds its way into the wrong channels and, perhaps, helps prolong the civil war," he said.

Mr. Joyce was dismayed by the tremendous inflation in China, but full of respect for the Filipinos. He believes we should help the Filipinos help themselves. They have sugar, gold, tobacco and copra and should prosper." *(Continued on page 134)*

# CUT FINISHING TIME 85%



**Car Heaters:** Performing dual water-evaporating and paint-drying function, this conveyorized oven reduced finishing time on radiator cores from 33 minutes to 5 minutes.

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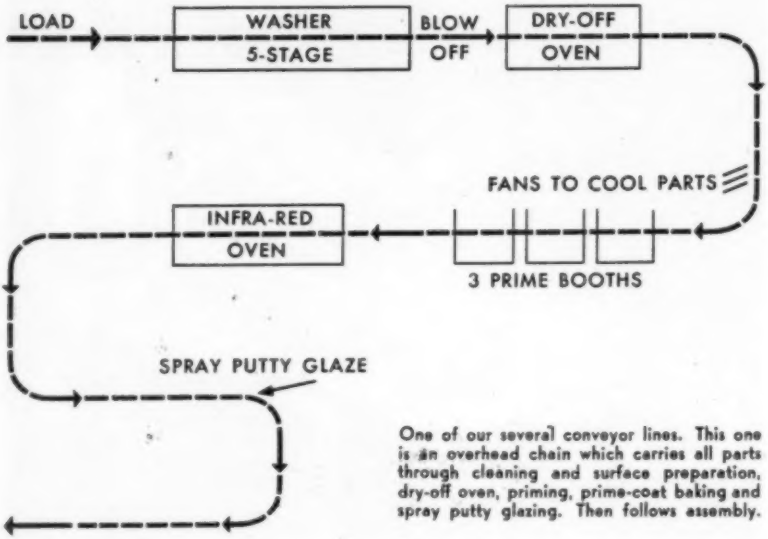
# FINISHING *Metal Caskets*




One of our several conveyor lines. This one is an overhead chain which carries all parts through cleaning and surface preparation, dry-off oven, priming, prime-coat baking and spray putty glazing. Then follows assembly.

TO MAKE and finish 300 caskets in a 9-hour day, all operations must be synchronized; and off-conveyor operations must be either eliminated or reduced to a minimum. Modern equipment, correctly engineered, kept clean and in good working condition, is also required to maintain both quality and high speed production. We must have no weak places in the line—no bottlenecks—and the work must be kept moving forward.

We have three types of conveyors in our casket finishing setup. For metal cleaning, Bonderizing and prime coating unassembled parts, we use an overhead chain conveyor operated through a variable-speed drive. It is 396-ft. long, has hangers spaced on 3-ft. centers, and usually travels at the rate of 8-ft. per minute.

Assembly, sanding prime coat, wiping, inspection and touch-up operations are all performed on elevated, horizontal roller conveyors.

The surfacer coat, color coat and top coats are applied on three identical power-driven, elevated, hori-

# On Conveyor Lines

**Finishing superintendent of The Cincinnati Coffin Co. tells how mass production methods and modern equipment are used for preparing the surfaces of steel caskets and hardware for spraying and drying all protective and decorative coatings.**

**By ROBERT ZUREICK**

zontal conveyors. One conveyor line carries casket bodies, another carries lids, and the third conveyor carries hardware and trim. Completed caskets are delivered to the trimmers and packing department by a moving belt.

All spray booths are of the water-curtain type. Except in the three prime coat booths, air is taken from the room at the tops of the enclosed spray booths and forced down through filters, then drawn across the parts on the horizontal conveyor, and finally exhausted through the water curtain to the outside of the building. This arrangement assures warm, clean air in sufficient volume to pressurize the spray booths, and it prevents

Our straight line transfer conveyor appears in foreground. At right angles to it are the hairpin turns of body conveyor (left), lid conveyor (middle) and hardware conveyor (right). The first spray booths (close to transfer) are those in which surfacer coat is sprayed.

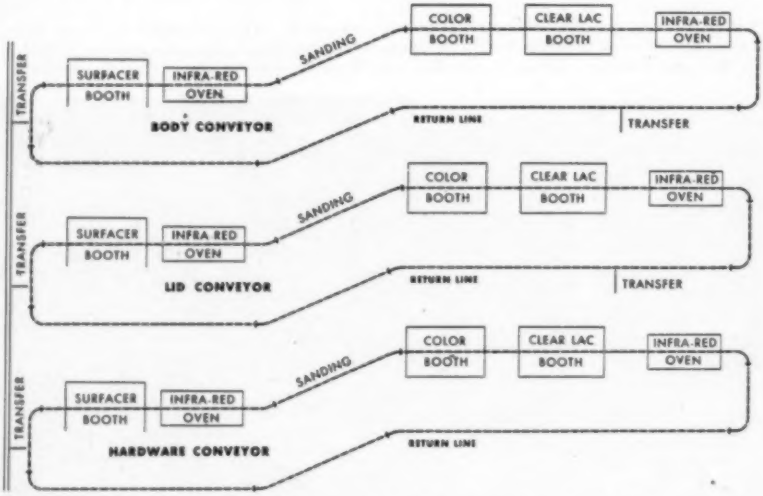
Close-up of water-curtain prime-coat spray booth, served by overhead chain conveyor. Three operators work in each booth.

any dust or foreign particles from alighting or remaining on the finished parts. *Filtered air is forced down into the area between the color and top-coat spray booths to help in setting up the finish as well as to keep it free from dust.*

All ovens are infra-red except the dry-off oven through which the casket parts are conveyed after they leave the 5-stage washer. This dry-off oven is indirect gas fired and the air is recirculated. It has air locks at each end.

A central paint circulating system supplies finishing materials to all spray booths. Storage for drums of material adjoins the mixing room. The supply room has four pairs of 60-gallon tanks, all equipped with agitators. Color material passes through a 120-mesh copper screen filter. Finishing materials are circulated through the system at 25-lbs. pressure, with 15-lbs. return pressure.

Unassembled parts, including all hardware, are hung on the overhead chain conveyor which moves them




Three conveyor lines carry casket bodies, lids and hardware through identical operations.

into and through the washer where the following cleaning and surface treating operations take place: 1) alkali cleaning solution sprayed at 170° F.; 2) clear water rinse at 140° F.; 3) Bonderite at 125° to 135° F.; 4) cold water rinse; 5) mild chromic-phosphoric acid solution sprayed at a temperature of 150° F. Upon leaving the washer, parts enter the blow-off station.

Casket lids, bases and bodies are hung vertically on the conveyor. To facilitate removal of excess moisture from the upper parts of these items, air jets are positioned to blow over the top surfaces. Supplementing the air jets, an operator uses a manual blow-off gun, and also a vacuum hose to remove excess water from screw holes and bolt holes.

All of this removal of moisture is done before any parts enter the dry-off oven where they are dried for three minutes at 350° F. To conserve space and time, the interval of travel between the dry-off oven and the first prime-coat booth is comparatively short. Two 48-in. fans, mounted vertically and located just outside the prime-coat booth, are used to reduce the temperature of parts before those parts enter the spray booth.

## Priming and Glazing Both by Spraying

We have three prime-coat booths. In the first booth, the insides of lids and the outsides of casket bodies are coated. In the second booth, the insides of bodies, the outsides of bases and the hardware are

Entrance end of two enclosed color spray booths; body conveyor is at left; lid conveyor is in foreground. The next spray booths in line are clear lacquer booths; then comes the infra-red tunnels and the hairpin turn in each conveyor line, see drawing on another page.

prime-coated. In the third booth, the outsides of lids are coated and any "misses" or thin places on other parts are touched up. The red synthetic primer is sprayed at a viscosity of 14-seconds at 70° F., No. 4 Ford cup, using 10-lbs. fluid pressure and 65-lbs. atomizing pressure.

After flashing (air drying) for three minutes the parts enter an infra-red oven where the prime coat is baked for three minutes at 350° F. Just beyond the exit end of this oven, the primed parts are transferred from the overhead chain to assembly conveyors. However before this transfer is made, an angle joint weld in the edge moulding of casket lids is glazed with putty. A lacquer-base glaze material, mixed half and half with thinner, is sprayed through a mask on this joint while the lid is still suspended from the overhead conveyor. This spraying of glazing material must be carefully performed, but we have found it to be more satisfactory than knife glazing on this particular profile—and certainly it is much faster.

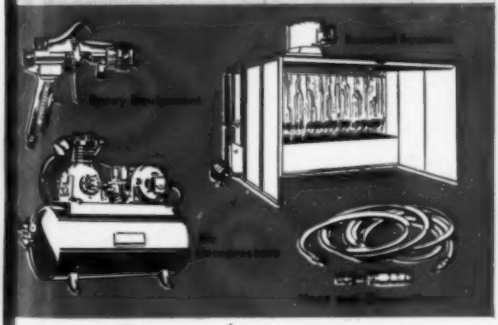
### Sanding Primer Coat; Then Inspection

At this point each body is attached to its base and thereafter the two continue as a single unit. The lid is another unit, and hardware is the third item. The prime coat on bodies and lids is hand sanded with No. 5/0 sandpaper. The glazed weld on the edge moulding of lids is sanded with No. 3/0 sandpaper, the workman using a portable power sander.

The blow-off and wiping operations follow, after which all parts are carefully inspected. Any thin

Exit ends of the first infra-red tunnels—those in which the surfacer coating is baked. Enclosed spray booths, in which the surfacer coating is sprayed, appear in background.

**A COMPLETE DeVILBISS LINE**
*TO SOLVE THE EXACTING FINISHING PROBLEMS OF ALL INDUSTRY . . . . .*



*eans* **Quality** *in all four . .*

SPRAY EQUIPMENT
EXHAUST SYSTEMS
AIR COMPRESSORS
HOSE & CONNECTIONS

# DeVILBISS HINTS . . . on *Finer Finishing*

## CARE AND CLEANING OF THE SPRAY BOOTH

The virtues of keeping a spray booth clean should be ample incentive without imposing a regular inspection discipline. Practically speaking, however, a schedule is almost necessary to assure periodic cleaning of the various parts of the booth.

Cleanliness pays off in reduced costs of rejects by minimizing contamination. The lessened fire hazard as well as better workmanship pays further dividends.

The spray booth is made of smooth, easy to clean metal. Overspray can be kept from adhering to the clean walls of the spray booth by the application of a non-drying, non-inflammable shielding material. This coating can be easily washed off with a jet of water or else be scraped off with a non-sparking tool. Besides protecting the walls of the spray booth, the spray shield as it is sometimes called, also brightens the booth with its light-reflecting qualities.

In the dry type booth, the fan blades should also be coated with the shielding material. Fan blades must be cleaned regularly otherwise accumulation of spray dust may throw them out of balance and subject them to excessive bearing wear. In this type booth, the stack and fan blades should be cleaned weekly. In the water wash type booth, however, cleaning these sections is not frequently necessary, because the water wash intercepts most of the overspray. In both types, the booth proper should be cleaned weekly.

In the water wash type booth, slow-drying material must be prevented from adhering to the interior of the washing chamber by using the proper concentration of a water wash compound which promotes the flotation of paint particles in the form of a sludge on the surface of the water tank. Where water wash spray booths are used for quick-drying materials such as lacquers, generally little more than enough compound to inhibit rusting is required. To maintain the proper compounding and to prevent sticking and rusting, a titration kit should be used once or twice a shift to test the strength of the concentration of compound. Sludge should be skimmed off water every 3 or 4 hours of operation to prevent its sinking and its fouling the header and nozzles in the water chamber.

The water tank should be drained and cleaned once a week per eight hour shift, and oftener if production is heavy enough. Before filling the tank again, open the access door, and with the pump running, inspect each nozzle to be sure that it is not clogged and that all of them are passing their usual volume of water.

places or bare spots, due to sanding, are touched up with a spot gun. Next, the parts are distributed to their three respective horizontal power driven conveyors—the bodies on one, lids on another, and hardware on the third. Let us consider the body line first.

### Three Finish Coats Sprayed and Baked

Bodies are given a spray coat of lacquer-base surfacer (23-second viscosity at 70° F., No. 4 Ford cup) with 10-lbs. fluid pressure and 70-lbs. atomizing pressure. Next the bodies pass through an infra-red oven where the surfacer is dried for 4½ minutes at 175° F. Then the surfaces are hand sanded with No. 7/0 sandpaper.

Blow off and tack rag operations follow. Another inspection is made before casket bodies enter the color spray booth. Here bronze lacquer is sprayed, using 15-lbs. fluid pressure and 65-lbs. atomizing pressure. The viscosity of the material is 22 seconds at 70° F., No. 4 Ford cup.

Between the color and top coat booth, all casket bodies are subjected to a blast of filtered air that sets up the color coat before the top coat is applied. The final top coat is a clear lacquer of 28% solids. It has a viscosity of 26 seconds at 70° F., No. 4 Ford cup, and is sprayed with 10-lbs. fluid pressure and 55-lbs. atomizing pressure. This coat is force-dried in an infra-red oven for six minutes at 125° F.

Operations on the hardware line are identical to those on the casket body line.

Casket lids are mounted on carriers at a 45° angle, and receive the same coats as the bodies, with two exceptions. On lids, the surfacer

In this view the final infra-red tunnels are in foreground. Beyond them, in background, are enclosed spray booths. Conveyor in foreground carries trays of racked-up casket hardware. To the right is lid conveyor. Farther to right is casket body conveyor line.

*Nationally Known*
MANUFACTURERS
DEPEND ON
RUST-SOL
PHOSPHORIC ACID CLEANERS
for POSITIVE
PAINT ADHERENCE

APPLIANCES

AUTOMOTIVE

BUSINESS EQUIPMENT

**RUST-SOL #120 WASH-OFF TYPE**

—a dependable, low cost cleaner for wash-off or immersion type of application. Can be used hot or cold in solutions containing as much as 10 parts of water. Acts in 1 to 2 minutes. Widely used as a rinse after alkali stripping or cleaning at high dilutions. Heavier concentrations thoroughly remove heavy rust and scale. Paint jobs adhere better over a surface prepared with RUST-SOL #120.

**RUST-SOL #103 WIPE-OFF TYPE**

Designed to clean and prepare steel for painting by simple, inexpensive hand application. At a recommended dilution with 2 to 3 parts of water, RUST-SOL #103 emulsifies oil and grease—dissolves all rust and oxide. Wiped off, it leaves the surface prepared with a rust-resisting Iron Phosphate Coating—a dependable painting surface.

**KLEM RUST-SOL IS—**

- NON TOXIC—Will not harm health
- SAFE—Contains no volatile or inflammable solvents
- EXCEPTIONALLY ECONOMICAL—Does not evaporate—Extended with water
- DEPENDABLE—Insures better paint adherence and durability

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**KLEM** *Chemicals Inc.*
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coat is dried for six minutes at 225° F. This increases sanding efficiency. Secondly, one wet and one dry color coat are applied to the outside of the lid. This prevents any mottling on the rather large expanse of plain shaped surface of the lid.

After rubber gaskets are attached to the top edge of the body, and bolts are inserted in holes around the lid edge, a final finishing room inspection is made just before the caskets are transferred to the belt conveyor which carries them to the trim line, final assembly, final inspection and packing.

## Ditzler Promotes N. W. Vogt and Roland L. Smith

The Ditzler Color Division of Pittsburgh Plate Glass Co., Detroit, Mich., announces the appointment of two veteran employees to the position of assistant sales managers

Rolland L. Smith in Sales Dep't. of Ditzler Color Div'n. of P. P. G. Co.

of the distributor sales department under Neil A. Fleming, sales manager.

Neil W. Vogt, formerly manager of distributor sales office, will handle new jobber business and export sales. Except for four years in the U. S. Army, where he attained the rank of Captain, he has been a member of the distributor department for 18 years.

Rolland L. Smith, formerly assistant sales promotion manager, has been connected with distributor sales for 15 years and in his new position will take charge of sales training and educational work.

## Klinkenstein Now President of Maas & Waldstein Co.

The Board of Directors of the Maas & Waldstein Co., Boston, Chicago, Los Angeles, and Newark, N. J., manufacturers of specialized production finishes, announce that G. Klinkenstein, formerly Vice President and General Manager of the company, has been elected President.

Mr. Klinkenstein has been with the company since 1915, starting as a chemist in the nitrocellulose plant. In 1922 he became Chief Chemist of the company and

G. Klinkenstein now President of Maas & Waldstein Co.

in 1928 was advanced to Technical Director. Mr. Klinkenstein was elected Vice President and General Manager in 1936. Under his supervision, and also as a result of his own research, the number of Maas & Waldstein Co. products expanded from just a few clear metal lacquers to a complete line of industrial finishes to meet practically every need.

Mr. Klinkenstein is a member of the American Chemical Society, the Newark Athletic Club, and is currently completing a term of office as 1947-48 President of the New York Paint, Varnish & Lacquer Association.

## Courses in Spray Painting Announced by DeVilbiss

Several comprehensive one-week courses for industrial finishers are included in the DeVilbiss School of Spray Painting curriculum for the second half of 1948. Maintained as a service to all users of DeVilbiss equipment, these tuition-free courses include instruction on spray painting technique and function and care of spray equipment.

Classes, lasting one week each, will begin on July 12, August 9, September 13, October 11, and December 13, with all courses covering the same instruction. Since class size is necessarily limited, it is advisable to write for reservations as early as possible to The DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio.

**"FINISHING SPECIALIST'S" RECOMMENDATIONS**

**step-up quality, speed production**

A few recommendations from a Lowe Brothers "Finishing Specialist" solved the cleaning and finishing problems of a midwestern manufacturer. Result: A better finish—plus a more efficient production line as a result of a great reduction in rejects.

**RECOMMENDATIONS:** After a thorough analysis of the manufacturer's production problems, the Lowe Brothers "Finishing Specialist" recommended changing the cleaning method; placing automatic hot water sprays on the rinse tanks; altering the spraying system; and recommended a material of exceptionally fine grind that was formulated for the job.

**IMMEDIATE RESULTS:** Residue which had been carried from cleaner and acid tanks into the rinse tanks was eliminated. Quality of finish was greatly improved. Rejects were no longer a problem, and production was increased 50%.

This report is typical of *many* actual case histories—representing manufacturers large and small—which continue to provide new evidence that a Lowe Brothers "Finishing Specialist" has the knowledge, experience and willingness it takes to make the kind of recommendations that assure the most satisfactory finishing results.

Whether or not you have a problem, a Lowe Brothers "Finishing Specialist" will gladly study *your* finishing methods for possible improvement. Remember—he's serving *you* and selling *nothing*. You need not be a Lowe Brothers customer to benefit by his service. Just write

**The Lowe Brothers Co., Dayton 2, Ohio**

*Lowe Brothers*
FINISHES FOR INDUSTRY

# Painting Pleasure Boats

By WALTER RUDOLPH

A SUBSTANTIAL contribution to the beauty and preservation of modern pleasure boats is the paint job. This calls for high quality materials and skilled workmanship — to put on a protective film that will withstand continual contact (often violent contact) with water and all kinds of outdoor weather.

To get a practical insight into boat finishing procedure I visited the Richardson Boat Co. at North Tonawanda, N. Y., where boatmaking craftsmanship is a tradition. This firm builds some 500 pleasure boats a year. These include such types as sedan cruisers, sports commuters, express cruisers and semi-enclosed utility models. In this article, I'll discuss primarily the latest "Richardson 34", a cabin cruiser 34-ft. in length. The only essential difference between finishing operations on this boat and others of the group, relate to structural specifications and customers' preferences as to color.

## Rugged Hull Construction; Formed Plywood Panels

Advancements in Richardson design and construction since the war include the development of a rugged plywood hull which is vastly different from the conventional planking system. This feature is of interest and value to the user, since this hull stays watertight and troublefree for many years. There are no seams to caulk and

Below, Rubbing final finish on piano. Rubbing operation is usually done before units are assembled. With Sundstrand Sander pianos can be finished after assembly due to ease with which contours and mouldings can be followed with this versatile machine. A better finish than with hand block is obtained and saving in time and abrasive paper is considerable.

Below, Sanding surface coat on top of automobiles on a production line. In addition to top of cars, Sundstrand Sanders are used for hoods, door panels, and trunk lids. Oscillation speed of machine produces desired cut, produces smooth finish on undercoat sanding operation and lessens operator fatigue. The latter is an important factor where auto bodies must move in regular speed on the production line.

ON PRODUCTION OR MAINTENANCE JOBS

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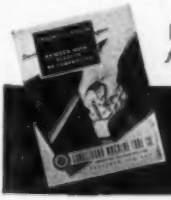

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no planks to buckle. The hull requires only a light sanding and a coat of paint periodically to keep its "factory-new" quality of beauty.

Richardson builds strength into the boat from its sturdy laminated white oak stem to the beautiful molded transom. Panels of ½-in. 5-ply molded Honduras mahogany (bedded at the chine and keel with a non-hardening compound) exactly fit the frame curvatures and are securely fastened by careful experienced workmen. In other words, the surfaces upon which paint is to be applied guarantee against blemishes, checking or cracking.

This is known as the Haskelite Hull (Haskelite Mfg. Corp., Grand Rapids, Mich.) welded together by waterproof phenolic resins, making a bond stronger than the wood itself. Panel sections are feathered together so the joints leave no unsightly marks or seams. This is important to the painters as it minimizes the filling in and smoothing of surfaces.

Richardson has from 20 to 30 boats in various stages of completion at one time. Three assembly lines, as it were, proceed from one end to the other of a bay measuring about 200x50-ft. Alexander Bajorek, paint foreman, supervises finishing operations through all of the assembly stages.

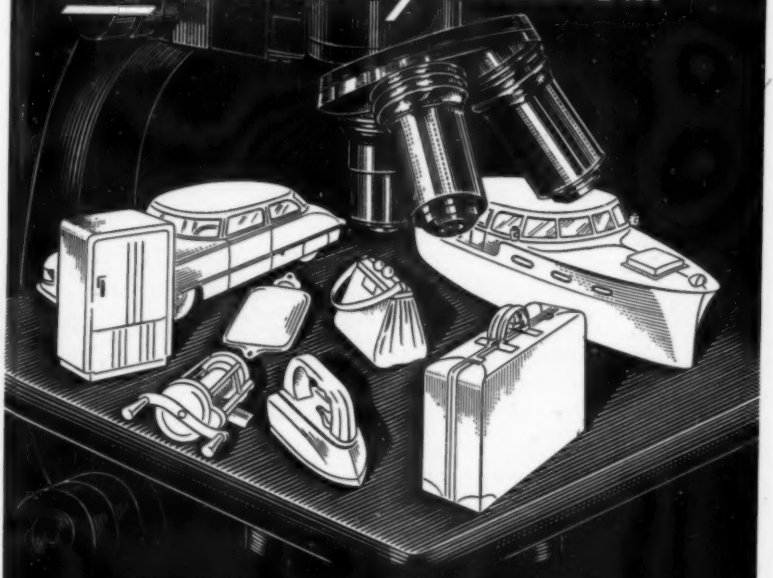
### Wood Preservative Treatment Plus Coat of Wood Sealer

Mahogany panels are stacked at the beginning of the lines, becoming the "skin" of the boat hull at the proper construction interval. These panels are treated with an effective wood preservative, as protection against checking. Because it is highly toxic, this preservative is brushed on. In fact, spraying does not enter into the boat painting picture in this establishment.

All framework of the boat underneath the flooring gets the same perservative treatment, this being known as the bilge of the boat. Sealer is brushed on all of these surfaces, too, which is another preliminary to actual painting. Treated, exterior-grade, marine plywood is fastened to the framing.

An ordinary putty knife is used to apply white lead putty to all irregularities on exposed surfaces, such as those left by sunken screw heads, etc.

# this is Stanley Chemical



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after which both sides receive another coat of the same sealer, which air-drys overnight.

Using an ordinary putty knife, painters then apply white lead putty to all irregularities in exposed surfaces, such as those occasioned by screw heads. Joints of the bedding and the transom seam are also puttied, and the latter, in addition, requires cotton caulking. Where the stern panels of the hull join the side and bottom panels, brass stripping is fastened because this union can not be altogether covered otherwise. The stripping covers what little checking might occur.

During the preliminary operations just named, the boat has laid bottom-side up. Before the hull is righted and placed in a cradle to move down the line, the bottom up to the water line gets three coats of anti-fouling Fisherman's red. This is a "wearing-away" paint developed to prevent the gathering of barnacles, moss or marine growth of any kind. The bottoms of boats that are in fairly regular service are generally painted annually with similar paint.

### Deck Canvas; Primer Coat; Repair Puttying; Name Decals

Righted, the hull moves down the assembly line. Carpenters now begin adding the upper components of the boat cabin and so on. Painting operations that follow are planned to tie-in at appropriate intervals with the overall construction work. Sealer is brushed on all new parts.

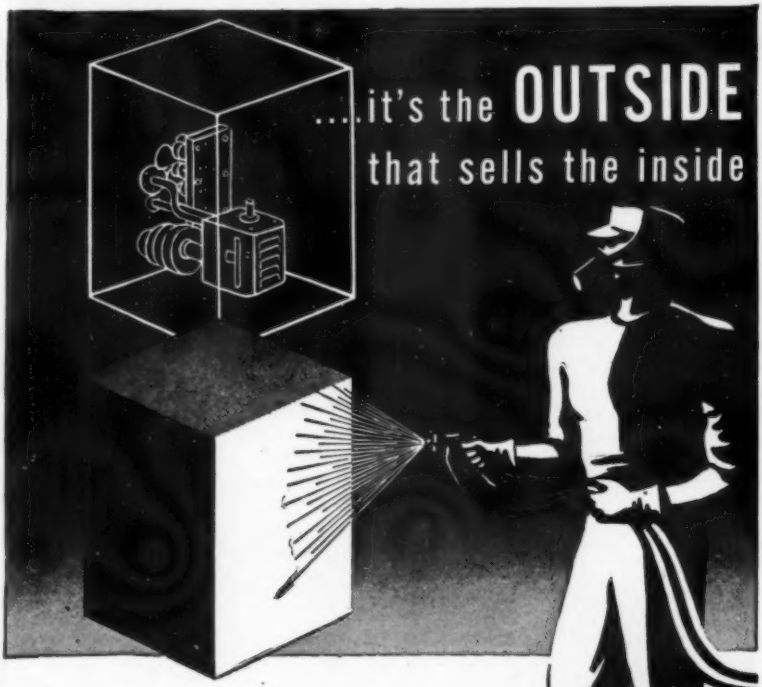
Following the coat of sealer, "under-canvas" grey is applied to the deck. Canvas is expertly

The first coat of flat white primer on the hull—after drying overnight, inspection and glazing if necessary—is sanded.

stretched over the entire deck surface and fastened at its edges with stapling machines. Then painters go over the added construction and putty all imperfections. The entire boat then gets another coat of sealer, and is allowed to air-dry overnight. The priming coat is now applied.

Any defects such as might be caused by a screwdriver slipping are next given careful glazing with a special compound which is knifed into the wood, using a 1½-in. steel putty knife. All interior surfaces are carefully sanded smooth.

Interior enamel is brushed on. Meanwhile one of the deck colors —usually there are several in the decorating scheme—is brushed on,

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too. While the first color sets up, cutting in is done with the second, and so on. We should note that Richardson painters work in crews of fours, two painting interior surfaces, and two working on the exterior. Thus painting on the hull is carried along as the interior painting is being done.

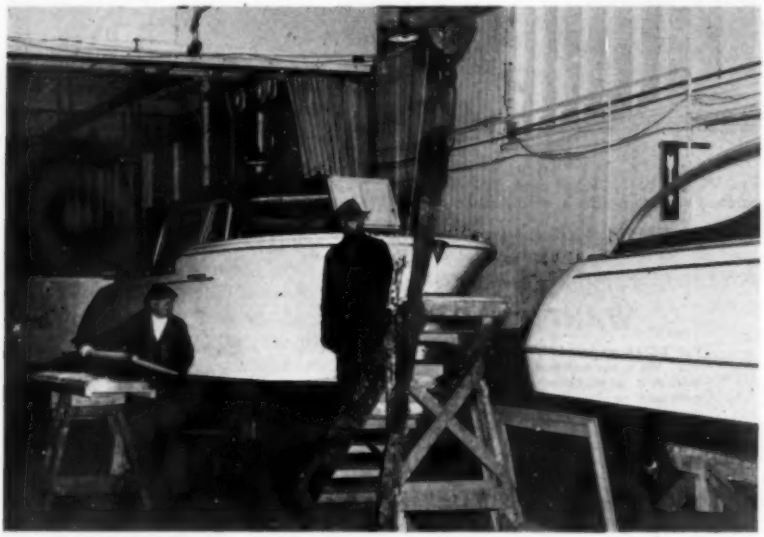
### Enamel Coats; Stripes; Numbers; Name Decals

The first coat of flat white primer—after drying overnight and inspection and glazing, if required—is followed by careful but thorough sanding. The second coating for the hull is of white, glossy enamel. It is allowed to dry between 24 to 48 hours. The last sanding—with fine sharp sandpaper—follows; then comes the final egg-shell white enamel coat.

When the last coat of enamel is thoroughly dry, stripes are painted, numbers and names are decaled according to customer specifications, and the boot-top is cut-in along the water line. Painting of the boat is now completed. A variation of the procedure just outlined is entailed in the finishing of Richardson's sports commuters, which require varnishing of the plywood cabin walls.

### Fine Varnish Finishing of Mahogany Plywood

The mahogany plywood first gets a coat of filler and is allowed to dry overnight. Application of the first coat of varnish is then made. The



At the "front door" end of the assembly line, workmen put seats in cabin cruisers.

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For maximum economy and easy handling where extreme heat-resistance is not a factor.

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For use where baking *cannot* be employed. Porous castings, wood, or other surfaces.

**4. Air-Dry Wrinkle**
For touch-up and repair of baked surfaces, or where no baking facilities are available.

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**2. NEW Air-Dry finish**

Now you can get a wrinkle finish on many new surfaces, such as wood and porous castings, or where baking is not available or practical. Again, Fuller demonstrates, "where there's a need Fuller will meet it."

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material for this initial coat is varnish thinned with 25% turpentine to secure maximum penetration and adhesion. It is allowed to air-dry 24 hours. The surface is then carefully gone over with fine sandpaper.

A second coat of varnish is brushed on and allowed to dry up to 24 hours. It is also sanded with fine sandpaper. Then the final coat of Regatta Spar varnish is flowed on to secure a matchless finish of enduring beauty.

With so much hand painting, it goes almost without saying that Richardson painters require high quality brushes in considerable number. The stock of brushes is always high, and a large number of prewar brushes are currently in use. Only pure china bristle brushes are used, as far as is possible.

For varnishing, this firm uses triple-thickness badger-hair brushes which are always ordered special. Application of varnish follows the tradition of the "carriage days", stemming from Wurlitzer and Pierce Arrow practices, and has been highly perfected at the Richardson Boat Co. For that matter, craftsmanship of the highest quality is required for all Richardson boat fabrication and finishing, placing this manufacturer among the leaders in the field practically since the firm's inception in 1909.

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EYE STRAIN, due to improper lighting, usually causes headaches and fatigue, which certainly reduce the worker's efficiency and lower his morale. Adding more light may not necessarily produce better lighting for the workers.

We must also be sure that we get the right amount of light and the right kind of light in the places for the particular working requirements of our production, taking into account the kind of work to be done as well as the layout of our plant. This is why more manufacturing firms are having their shop lighting carefully planned.

Good lighting should be free from glare, and should be evenly distributed over all working areas. This often means that walls and ceilings need to be painted in light colors so they will serve as reflecting surfaces. Machines, work stations and floors should also be light in color, so that there is no great difference in brightness in the worker's field of vision, as this is tiring to the eyes; and, of course, there should be enough light for the job to be done.

ALTHOUGH it would be readily agreed that clean windows, walls, ceilings and lighting fixtures make for efficiency and a pleasant environment, it is surprising how often cleaning is overlooked or put off indefinitely. Lighting fixtures, walls, etc., are often allowed to accumulate dust and films over long periods. There are cases where windows and skylights are allowed to go for many months and even years without being washed.

Lighting experts estimate that dirty fixtures, windows, and skylights can reduce illumination by as much as 50%. This is naturally reflected in worker fatigue, impaired alertness against accidents and reduced productivity. The remedy is not more lights but simply a thorough cleaning of existing light sources.

Naturally, the advantages of daylight should be made use of wherever possible, therefore, windows and skylights should be kept clean.—OAKITE.

*I could drag this story out by elaboration on the many types of castings—for example, sand, heat-treated, mold, die; also the many alloys used. However, this is only one phase of the aluminum coating problem . . . It has to do with entrapped air, which is really the cause of almost all blistering.—*

# NON-BLISTER BAKE FINISH ON Aluminum Castings

By A. P. LEHMANN

***Technical Director***
***National Aluminum Products***

THE COATING of aluminum and aluminum alloys has always presented a problem to the applicator of baked-on organic finishes. This, in turn, reflects back to the producer of the metal, as well as to the paint manufacturer, in the form of complaints.

The subject of this article is confined to: 1) aluminum castings; 2) the cause and effect of blistering of baked-on finishes; and 3) an efficient, economical and practical method of eliminating blisters without special pre-treatment, other than degreasing if necessary.

**Cause of Blistering . . .**
**Porosity of Metal**

Cause of blistering can be attributed almost wholly to porosity of the metal which allows air to be entrapped in the pores at the surface. Other factors that cause distortion of the paint film are the presence of moisture, grease, oil, etc. I might add here that grease and oil, as a rule, cause cratering in the paint film rather than swollen unbroken blisters; and degreasing is necessary for the elimination of same. An excellent preventive measure is to make sure that the castings are clean and dry.

Castings that are free of grease, oil and moisture, present one remaining problem, namely porosity and entrapped air. Many finishing men now use sandblasting or shotblasting to close the pores of aluminum castings, so that a primer can be applied and baked on—and when

it is subjected to baking heat the primer will not blister because the metal pores have been closed.

Let us look at the problem from a practical angle and see if we can reasonably determine why blisters appear on a paint film that has been baked, and what is necessary to eliminate these blisters without some special pre-treatment. The reasons for the blisters can be listed as follows:

1) Expansion of entrapped air at, let's say, 300° F.

2) A soft film (the primer coat) that raises when the air expansion starts underneath.

### A Thermo-Setting Primer Seals Entrapped Air

How can this blistering condition be prevented without closing the surface pores by sandblasting or shotblasting? Theoretically and actually by application of a paint film that will thermo set fast, and which will effectively seal in the entrapped air. I have in mind a primer paint film that has enough resistance to compress the air contained in the covered pores—somewhat like an air compressor which does a similar job of entrapping air with a steel shell built to do a specific job.

The problem is to develop a priming system that will have the following qualifications:

1) A suitable filling surfacer or putty.

2) An excellent primer that will not blister when baked.

3) A good touch-up spot putty.

Products have been developed and are in use which will meet these desired specifications. Products for a non-blistering priming system, and its uses, are: A) bake putty filler; B) bake primer; C) air-drying touch-up spot putty.

### Method of Application for Filler Putty

Apply the filler putty with a squeegee, or wipe it on, or "knife" it on with a spatula, to cover all large pores or irregular surfaces that need filling or leveling. Bake for 15 to 45 minutes at 250° to 325° F. in a batch-type or conveyorized oven. Radiant or convection heat can be used for baking this filler putty. Some work has been done with induction heating and the results were satisfactory. After baking, allow the surfaces to cool and then sand the coated areas with No. 100 dry abrasive paper, to prepare for the primer coat, or additional puttying if necessary.

### . . . and for Primer

The primer I have in mind can be reduced with xylol or toluol for spraying. Apply a mist coat and then follow with a wet coat. Allow the solvent to flash off; then bake the coating for eight to ten minutes at 275° to 325° F. It is best to start the primed parts into the oven at a lower heat—say about 200° F.—and then gradually work up to top heat in about one or two minutes. Baking for four or five minutes at top heat is all that is necessary.

### . . . and for Spot Putty

Prime coated parts can be inspected and if any defects are noticed they can be touched up with the air-drying spot putty which will dry to sand in 25 to 35 minutes. Wet sand the surfaces with No. 320

# Another Real Challenge to Your Equipment

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Up at Tilbury, Ontario, **Burdett Infra-Red Gas Systems** are on the job—drying 3,000 lbs. of assembled domestic oil burners an hour for the Chatco Steel Products Company. Paint drying is an important operation in this plant. With Burdett Systems, time in and out of the heat zone is 7 minutes at 350° F. Gone forever is another large production bottleneck.

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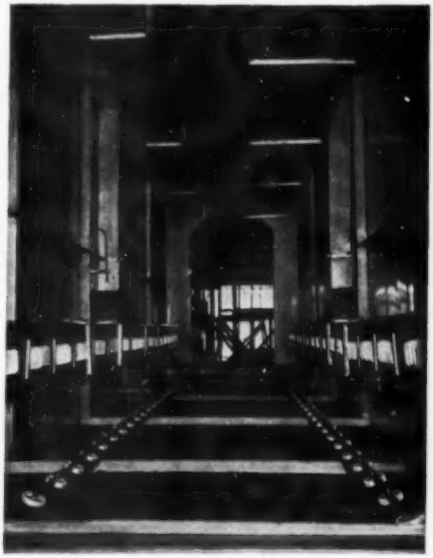

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to No. 400 wet-or-dry sandpaper. Then finish with baked enamel or an air-drying lacquer.

The products just recommended will insure maximum quality; they have been proved in testing and use in industrial finishing. Their important features are:

1) Non-blistering, without pretreatment of the aluminum casting.

2) Ease of application.

3) Permanently good adhesion.

4) Excellent sanding qualities.

5) Satisfactory "hold out".

The final finish exhibits excellent resistance to salt spray, humidity, alkali solutions, acid solutions, cold water, hot water, grease, oil, lacquer and weather.

In addition to its value for use on aluminum castings this painting system is also used on products made of wrought aluminum alloys, steel, steel castings, etc.

ADDED NOTE BY AUTHOR: One point I did not include in the foregoing article is the fact that when castings are subjected to grinding with abrasive wheels, sometimes enough "metal flow" occurs to seal some of the surface pores in the metal. However, this alone is not sufficiently complete or dependable to be real insurance against the possibility of blistering of the baked finish.

## Turco Products Conference

Turco Products, Inc., Los Angeles, Chicago and Houston, assembled District Managers recently for 2-day home office conference with laboratory technicians and department heads.

A review of the adaptations and application of new wetting agents and detergents to their line of specialized cleaning compounds was the principal theme of these sessions.

## Burke Roche Becomes Vice President of Binks Mfg. Co.

Burke B. Roche has been elected Vice President of the Board of Directors of the Binks Mfg. Co., manufacturer of paint spraying equipment, cooling towers and industrial spray nozzles. Prior to his election as Vice President, Mr. Roche was in charge of the Industrial Division of the company.

Burke Roche, now Vice President of Binks Mfg. Co.

Mr. Roche, who has been with the Binks organization since 1939, installed finishing equipment at the Kingsbury (Indiana) Ordnance Works, one of the largest systems ever made. He later was graduated from the Naval Ordnance School at the Naval Gun Factory, in Washington, D. C., and served as a Naval Ordnance Officer in the Pacific theatre of operations during the war. After graduating from Loyola University in 1936, cum laude, with a bachelor of philosophy degree, he attended Northwestern and DePaul Law Schools. Receiving his degree from the latter in 1939, he was admitted to the Illinois bar in 1939.

## P. J. Thelan Made Chemist at Glidden's S. F. Laboratory

Appointment of P. J. Thelan as a Research & Development Chemist at the Glidden Co.'s San Francisco laboratory is announced by R. R. Abernathy, Technical Service Director of Glidden's San Francisco Division.

Mr. Thelan joined the Glidden Co. in 1944, when he was first employed by the company's Nubian Division in Chicago. Two years later he went back to the University of Iowa for further study in organic chemistry, and between 1946 and 1948, alternated between Glidden and the University until he received his doctor's degrees in organic chemistry in January of this year.

The Glidden chemist also has a B. S. in chemistry from the University of Santa Clara, and a master's degree from Iowa. He is a member of the American Chemical Society.

## Technique of Applying Attractive Finishes on

# PREFABRICATED METAL PARTITIONS

**Engineer in charge of quality control laboratory for finishes at E. F. Hauserman Co. tells how mass production finishing is accomplished in a custom shop.**

**By H. W. SACKS**

PARTITIONS made by our company in former years were used principally in factories, and they required only one coat of olive green dipping enamel. Eventually the company expanded and introduced several types of office partitions, and finally complete steel interiors for fine offices and public buildings. Then our problem was to provide a finishing system that would be flexible enough to paint all of the component parts, large and small, in a wide variety of colors, types of finish and wood grain effects—and still maintain a continuous flow of production.

### Paint Mix and Color Matching Room

It soon became apparent that far more than mere planning would be required to have conveyorized, mass production painting, with so many colors and types of finish. Separation of jobs, or even component parts of the same job on the conveyor lines is impracticable if not

Transfer of wood grain by machine rollers. Machine at left is used to apply graining to edges of pressed metal parts; the one at right transfers grain figure to mouldings and narrow panels. Notice end shoes to prevent raw steel edges from damaging roller.

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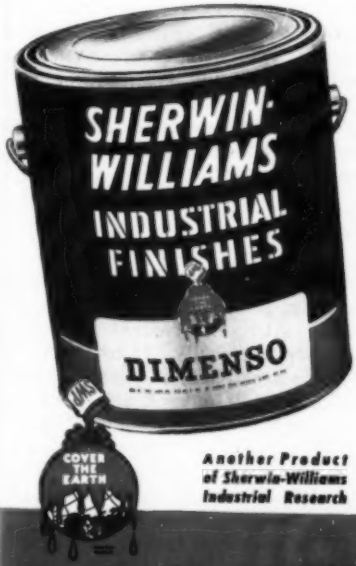


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**INDUSTRIAL FINISHES**

impossible. The first step in accomplishing our purpose was to set up a paint mixing and color matching department.

When a final contract is received, all of the finish information required by the paint mixing department is taken off, such as, type of job, type of finish, color numbers and just where they apply; and the total area of the job, broken down into each color. This information is delivered to the paint mix department where it is placed on file until the contract appears on the work schedules.

### Materials Prepared Ahead of Time

About ten days or two weeks before the metal work on the contract is to be painted, the paint mix department figures the amounts needed for each color and starts the batches. The necessary ingredients are mixed to make the right quality of finish, and then the color is matched. This usually takes about three days. The completed batches are marked and put away until needed by the finishing department to paint the job.

The paint mixing department is divided into three sections: 1) Testing, research and development, and making color samples; 2) mixing batches and matching colors for all production work; 3) delivering material to the paint lines, controlling viscosity and doing general service work.

Obviously sections No. 1 and No. 2 are highly important to the finishing system, but it is section No. 3 that really makes mass production finishing possible on a custom shop basis. The service section, No. 3, delivers tanks of material, correct in viscosity and color, to the various spray booths; and hooks up air lines, guns, etc., so that spray operators do not have to be much concerned about anything except selecting the gun marked for the particular color shown by number on the first item entering the booth by conveyor. Numbered tags carried by the conveyor give sufficient notice of color changes.

Considering the wear and tear involved in the delivery and final erection of prefabricated partitions and interiors, finish requirements must be very high, especially for durability and resistance to abrasion. The primer has the following properties: Good filling, good adhesion, ease of sanding, and a hard surface to hold out the enamel top coat. It is highly important that the thickness of film be held to at least 1.2-mills, so that after a light sanding the primer thickness will be 1-mill.

### Attractive Durable Finish Is Really Necessary

Top coat enamels must produce a hard, mar-resisting surface which will not polish under vigorous rubbing. Also, the enamel coat must not scratch easily. If or when the film is scratched, it should be possible to rub out or wipe out the scratch marks without leaving much visible trace of them. Top coat enamels are applied to a thickness of 1.5-mills, making a total film thickness of 2.5-mills.

The overhead trolley conveyor is manually operated except through the vapor degreaser and convection-type ovens. Two reasons for using this type of conveyor are: 1) The

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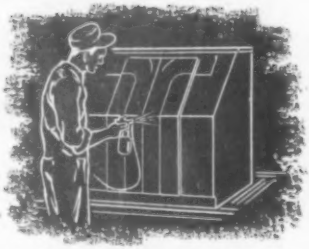
*a better baked finish*
*for* **WASHER BASES**

**CHARACTERISTICS:**
High resistance to soap, alkali and moisture . . . perfect matching of color with Porcelain enamel tubs . . . complete color stability . . . long wearing qualities (is chip-proof and practically impervious to scratches) . . . easily kept clean and sanitary . . . maximum protection against rust.



**APPLICATION:**
Only one coat is needed. Finish is sprayed on.

**BAKING TIME:**
20 minutes at 300° F. . . . 7 minutes with infrared. (Optional schedules are available.)

All Vedoc finishes are developed for a specific use, then slightly varied to best fit each customer's production setup. Write today for more information about these "better finishes". Also ask for your copy of the new booklet, *A Review of Product Finishing with Organic Coatings.*

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FERRO ENAMEL CORPORATION
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widely different sizes of parts to be finished (ranging from a 2-in. door jamb to a wall section 4-ft. wide by 6 to 8-ft. long); and 2) to avoid off-conveyor sanding of the prime coat.

Power operated chains lower parts into the trichlorethylene vapor degreaser below the floor line and raise them back to track level.

### Paint Heater Cuts Cost In Spraying Primer

In applying a heavy prime coat, a saving in time and material cost is effected by heating the material before spraying. The paint heater is installed in the supply line between the pressure tank and spray gun. Primer material passes through the paint heater where it is heated to a constant, thermostatically controlled temperature of 185° F.

The vapor degreaser. Double power-driven chains lower a section of conveyor track, with parts attached to hanger, down into the vapor, and then lift it back to track level. One minute is the cycle.

The principal of using hot paint is simple. Less solvents are added to the primer to thin it to spraying viscosity. Then, through hot application, more solids are deposited on the metal surface with fewer strokes of the spray gun. Being hot, the heavier material atomizes more readily, and may be applied with less chance of orange peel and sags. Fluid pressure of 32-lbs. and atomizing pressure of 65-lbs. are used. Primer viscosity is 80-seconds at 75° F., No. 2 Zahn cup.

### Prime Coat is Baked; Trolley Track Setup

Primed parts are carried through the convection oven where the finish is baked for 30 minutes at 300° F. Upon leaving the oven, the painted parts are allowed to cool for 20 minutes. At this point the single track conveyor branches out into a double parallel track with a switch at the point of intersection.

All hangers are of the horizontal bar type, with swivel rollers front and rear. The front roller moves onto one of these tracks, after which the switch is thrown causing the back roller to move onto the other track. This places the metal part in process at a 45° angle. The length of the double track is sufficient to accommodate 12 hangers with parts attached, with enough space between parts to permit sand-

ing and wiping operations on two sides. Primed surfaces are sanded with No. 320 sandpaper. Next, the door and reinforced wall section panels are packed with asbestos or rock wool. This is the only off-conveyor operation.

### Spraying and Baking Top Enamel Coat

Number tags are hung on the overhead conveyor just ahead of advancing parts to indicate the color of enamel to be applied to those parts. Finish enamel spray booths are supplied with tanks containing colors indicated by the numbered tags. Fluid and air hose are connected by service employees of section No. 3 of the paint mix department, so that spray operators need only reach for the correct spray gun and start applying the color enamel called for.

The finish enamel, an alkyd urea-resin base material, is sprayed at an average viscosity of 65-seconds at 75° F., No. 2 Zahn cup, with fluid pressure of 28-lbs. and atomizing pressure of 65-lbs.

A double-wet coat of finish enamel is applied, followed by a 30-second flash (air drying) period before parts enter the final bake oven where the finish is cured for a period of 25-minutes at 300° F.

### Wood Graining on Metal Surfaces

Success in reproducing wood grain effects on metal is determined by several factors: 1) A copper plate containing a clear, well defined etching of the particular wood grain; 2) a ground coat of uniform color after baking, producing a surface designed to hold out the graining ink; 3) graining ink which has the proper tack and consistency to fill the etching so that a well-defined print will result when the composition roll is applied to the plate.

Spraying hot synthetic enamel. Paint passes from pressure tank through a paint heater maintained at 185° F. More solids can be applied with fewer strokes of the spray gun.

Graining ink should not set up too fast after application to the surfaces, because sometimes it must be touched up and worked on with a blending brush. Also, the graining ink should not be too solid in color. A certain degree of transparency is desirable to produce naturalness in the wood grained effect.

The highest quality of grain reproduction can be obtained only by using the very best grade of inks. Considering the comparatively small quantity of ink used per square foot of grained surface,

the actual cost of the best high priced ink is negligible when compared to the naturalness and beauty of the grain reproduction; 4) the clear top coat of alkyd urea-resin base material must have the same mar proof, non-polishing properties mentioned heretofore in reference to the top coat enamel.

All parts intended for wood grain reproduction are given a prime coat, baked and sanded exactly the same as solid color jobs. Then a suitable color ground coat enamel is applied. This is baked for 30 minutes at 300° F. After cooling, the transfer of wood grain is accomplished by composition roller. Large hand rollers are used for panel sections and doors, due to the wide variety of sizes. Machine rollers are used for edges, narrow mouldings and panels.

After transfer of wood grain by rollers, the "wet" grained surface is gone over with a blending brush. This brushing is followed by minute inspection and touching up, where needed, with an inked angle brush. The grain coat is baked for 20 minutes at 280° F. Then the top coat of clear alkyd urea-base material is applied and baked for 20 minutes at 280° F. This coat protects the ground coat and grain figure, and offers the mar-proof and scratch-proof surface which is so desirable in prefabricated partitions and interiors.

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## Wyandotte Chemicals Holds Educational Conferences

Salesmen of the J. B. Ford Division of Wynadotte Chemicals Corp., Wyandotte, Mich., recently attended 3-day educational conferences in the seven regional headquarters of the organization—New York, Atlanta, Cincinnati, Indianapolis, Chicago, Kansas City and Montreal.

Carter B. Robinson, Ford Division Sales Vice President, stated, "although Wyandotte specialized cleaners celebrated their Fiftieth Anniversary April 29 of this year, I recommend to our sales force these signposts for our second 50 years—Work, Plan, Study, Save." Both sound and slide films were used in the conferences which were attended by a rotating team of home office sales, advertising, and technical service executives.

One session of the conference was devoted to cleaning before metal finishing, with a special meeting for the Wyandotte Industrial Department representatives who were present.

The new line of automotive, railroad, and general purpose metal cleaners was outlined in detail, together with technical service information on their performance in test runs. This session was in charge of Dr. Roy Heath, Manager Industrial Department, or E. S. Schmeling, Assistant Manager.

A written examination was given at each of the seven conferences in the service and technical information and methods used by Wyandotte representatives. The 3-day educational sessions stressed the demonstration and tests which will be of practical value to Wyandotte customers.

---

## New 3-M Executives

J. C. Duke was elected vice president in charge of the "3M" coated abrasive division of Minnesota Mining & Mfg. Co., St. Paul, Minn., in April. He joined the firm in 1921 and has been sales manager for the company's surface-coated abrasive paper and cloth.

J. A. Borden was elected vice president in charge of the "Scotch" tape division of Minnesota Mining & Mfg. Co., St. Paul, in April. He joined the firm in 1925 and for seven years has been sales manager for "Scotch" tapes, including the familiar transparent cellulose tape, 40 electrical tapes and more than 60 others for packaging, masking, sealing, decorating and sandblasting.

J. C. Duke and J. A. Borden

# THEORY AND PRACTICE OF *Furniture Finishing*

PART V

**Author's Note: This final chapter of the series contains suggested finishing systems for different kinds of modern cabinet woods, as used by furniture industries.**

**By ROLLIN H. WAMPLER**

THE SELECTION of the finishing system to be used on any given piece or suite of furniture depends upon many factors. The amount of time and materials that can be spent on finishing depends, to a great degree, upon the selling price the furniture can command. A fairly recent survey indicates that total finishing costs, direct and indirect (including overhead or burden) on household furniture may vary from 6% to 21% of the manufacturer's selling price.

The finish required will determine whether or not the wood may need bleaching. Color styling depends upon the design and the market for which the furniture is made.

Whether or not the wood will need filling depends upon the wood used in the furniture. The type of stain to be used will depend upon the quality of the furniture, the natural color and uniformity of color in the wood, and other such factors. Whether or not shading, glazing and wiping stains may be required will depend upon the color effects, highlighting desired, etc.

The decision on whether to use lacquer, varnish or urea-alkyd furniture finish is usually dictated by considerations of working and drying space, conveyor layout (if any), drying facilities, and costs. Whether the rubbing is done to produce a flat or dull sheen, a semi-gloss or a high gloss is dictated by market demands and styling.

In the paragraphs to follow I shall examine a few typical finishing systems in common commercial use. Variations are infinite. A knowledge of the properties of the different materials, and considerations of practicality will probably dictate the method to be finally chosen. Unnecessary and duplicating operations have been avoided as far as possible.

### Finishing Woods That Have Small Pores

Such woods as poplar, maple, birch, beech, red gum, white gum,

tupelo, pine, and fir have such small pores that no filling is needed. In passing, I might mention that conifers, such as fir and pine (softwoods), have no pores in the language of the wood technologist, but for the purpose of this article I shall refer to woods that require no filler as small-pore woods and those that do require filler as large-pore woods.

Common red and brown maple finishes can be produced on maple, birch, poplar, beech, and other fairly light-colored woods that have no prominent grain pattern.

### Finishing System for Maple Wood

A common system consists of:

1) Apply NGR (Non-grain-raising) stain or NGR stain mixed with a low-solids mixing lacquer. Sand lightly with fine sandpaper.

2) Dip, brush, or spray a maple pigment wiping stain. Blend out and highlight, if desired, with rags or rags and brushes.

3) Spray lacquer sealer. Sand lightly with fine sandpaper.

4) Spray one coat of gloss lacquer (21% to 27% solids).

5) Spray one coat of flat lacquer (21% to 27% solids). Rub.

In this schedule, and the other to follow, one coat of varnish or one coat of urea-alkyd furniture finish may be substituted for the two coats of lacquer—or one coat of high-solids (30% or more) lacquer, or "hot lacquer" at equivalent solids may be used. For the best quality furniture, more coats of any material may be used to get better build and to permit a better rubbing job.

A walnut or mahogany finish can be put on the same woods by the same system, using materials of the proper color.

A simpler system for small-pore woods, (particularly maple, walnut or mahogany) to produce a blond, wheat or harvest tone of finish, is as follows:

1) Dip, spray or brush pigment wiping stain. Blend out. Then shade or fog over the entire piece with the same stain mixed with three or four parts of its own volume of VM&P naphtha. This operation deepens the color and can be used for shading and highlighting.*

2) Spray lacquer sealer. Sand lightly with fine sandpaper.

3) Apply top coats.

This system can be used for blond and modern finishes by choice of the proper wood stains, as well as for the more conventional colors. For darker colors, such as mahogany, the sealer can be colored with a little NGR stain.

If the wood is uniform in color and texture, and if the utmost in clarity is desired, the following system can be used:

### Cherry System on Cherry Wood

1) Spray cherry NGR stain.

2) Spray lacquer sealer. Sand.

*It is customary to stain wood very slightly if it is to receive a blond finish. The only exception is where the wood itself has a yellow cast, such as prima vera. You would not use a pigment wiping stain on prima vera. A blond finish differs from a natural one in that the wood has a definite yellow cast, however slight; whereas a natural finish will show only the true color of the wood. Pigment wiping stains for a blond finish are usually made with white pigments, with very small amounts of coloring pigments. Light-colored modern finishes on small-pore woods are often obtained by using a harvest or wheat pigment wiping stain.

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3) Apply glaze. Blend out.
4) Apply top coats.

A cheaper system for giving a walnut tone finish to small-pore woods is to spray a sealer mixed with NGR stain of proper color; sand; and apply topcoats.

### Finishing System for Large Pore Woods

One of the simplest systems for finishing large-pore woods (for example modern light walnut finish on walnut wood) is revealed by the following:

1) NGR sap stain if required.
2) Wash coat. Sand.
3) Fill.
4) Lacquer sealer. Sand.
5) Lacquer shading stain (spray) on edges and trim.
6) Top coats as required.

Some finishers omit the wash coat specified in the foregoing system. If a darker color is required the sap stain, if any is used, may be followed by an overall walnut NGR stain.

A similar system—this one for lime oak finish on oak wood—is as follows:

1) Clear wash coat or thin white lacquer toner. Sand.
2) Fill with white filler.
3) Lacquer sealer. Sand.
4) Top coats as required.

Such finishes as Swedish Oak on oak wood and the blond colors on prima vera and avodire are produced in a similar manner with the proper color fillers. Sometimes the wash coat or sealer may contain a very little color (NGR stain) to enhance the brightness or depth of the color.

### Mahogany Finishes; Stained; Bleached

An 18th century mahogany finish of high grade (on mahogany wood) can be produced as follows:

1) NGR stain. Apply heavier on gum trim (if same is used).
2) Wash coat. Sand.
3) Black transparent mahogany filler.
4) Glazing sealer. Sand.
5) Mahogany glaze. Blend out.
6) Top coats.

To eliminate the use of any glaze the filler may be followed by another application of NGR stain, followed by lacquer sealer and the top coats. This treatment produces a very clear transparent finish. Or the sealer may be colored with NGR stain to replace the glaze. Sometimes the uncolored sealer is followed by an overall coat of lacquer shading stain or toner which is also used for highlighting or for deepening the color of gum trim.

A bleached mahogany finish, on mahogany wood, can be produced as follows:

1) Bleach the wood. Sponge off the bleaching solution and allow the surface to dry.
2) Wash coat (colored very slightly with yellow NGR stain if desired). Sand.
3) Light brown filler.
4) Lacquer sealer. Sand.
5) Top coats.

In all of the schedules described previously, and in the following, it should be understood that in practice there is nearly always some decoration to be done such as a darkening of gum trim, glazing carvings and feet, staining routings, or highlighting or a uniform-

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ing of color with shading stain. These operations are usually done after the sealer coat is applied, when the true finished color first becomes apparent. This local work may be done at any point. It is advisable to do it before top coats are applied, however.

### Finishing Systems for Mixed Woods

In practice, much furniture consists of tops, ends, fronts and panels of large-pore woods and smaller areas of small-pore woods. Examples include dining tables with turned posts; also novelty tables, end tables, lamp tables, and coffee tables. The panels may be walnut or mahogany and the posts, feet and trim may be white gum, birch, tupelo, poplar, or some other light-colored woods. While these finishing problems may be handled much like those involved in finishing the trim and feet of bedroom and most dining room furniture, sometimes special procedures are used to facilitate the finishing process.

Consider a novelty table with three round mahogany veneered tops or tiers, each separated from the other with a single turned white gum center post. The single turned post and three legs (pedestal) under the bottom tier are also made of white gum. All gum posts are fluted, and the legs and edges of the round tiers or shelves are routed or grooved. How can the table be finished in a uniform 18th century mahogany color of good quality, with a minimum of operations? One method is as follows:

1) Spray NGR stain over the entire piece.

2) Apply a wash-coat over the mahogany surfaces (tiers) only. Sand the surface lightly.

3) Fill veneers only.

4) Dip in pigment wiping stain. Wipe veneers clean; blend out posts and legs, leaving the stain in the fluting and routing. Highlight the legs slightly.

5) Spray lacquer sealer over the entire piece. Sand.

6) If desired, darken the edges of the three tiers with lacquer shading stain by spraying, and highlight slightly by extending about one inch inside the edges on the mahogany veneers. Also, darken the posts and legs or highlight them with shading stain.

7) Spray the top coats. Use two or three coats of gloss lacquer, followed by one coat of flat lacquer. Rub the flat mahogany veneered surfaces.

Of course, there are perhaps a dozen ways, all different, by which the job could be done. In some cases the mahogany panels are filled before the table is even assembled. Also, the lacquer shading stain may not be needed at all.

Consider now a walnut end table with turned legs and braces of poplar. A simple system of finishing would be:

1) Fill top only.

2) Dip in walnut pigment stain. Blend out, wipe top clean.

3) Lacquer sealer. Sand.

4) Top coats.

While this system may leave something to be desired in clarity of tone, it is used in a number of plants producing novelty furniture. A simple variation would be to fill the entire piece, apply a sealer

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coat, and shade the poplar posts and edges of the top with lacquer shading stain. Then the top coats are applied.

Since enamel finish systems were described briefly in a preceding section, I shall devote no further space to them here.

Summary—To many finishers, this series of articles may seem to be elementary, but perhaps it is good to review some of the fundamentals of finishing occasionally. At any rate, if the reader has been enlightened on a single point or if he has been given a single useful new idea, then the author's purpose is accomplished. END.

## Clean Turntables for Spray Booths

CLEANLINESS in the finishing room is not only "easy on the eyes"; it is an asset. Take, for example, the turntables in spray booths. Place a tubular strawboard covering, similar to a mailing tube, over the pedestal. Cover the top with a sheet of cardboard or strawboard which is cut round, square or rectangular, according to the shape of the turntable. Cut the cover oversize and score the edges so they can be easily bent down when they are set in place, to cover the edges of the turntable top. This edge covering will prevent overspray from collecting on the under side of the top.

The turntable base can be protected with a similar covering. These covers do not retard operation of the table. When coated with overspray the masks may be easily replaced with clean covers. Coated covers can be removed and burned with other waste material outside the plant.—B.C.

## *Joseph J. Mattiello of Hilo Died May 16*

Dr. Joseph J. Mattiello, Vice President and Technical Director of Hilo Varnish Corp., Brooklyn, N. Y., died in his sleep early on Sunday, May 16. His sudden and unexpected death was a severe shock to his business associates and many friends.

Dr. Mattiello was recently elected a fellow of the New York Academy of Sciences, in recognition of his achievements. He was also chosen one of the ten ablest chemists or chemical engineers in the field of paint, varnish and plastics.

## *Harco Appoints Labadie Mid-West Representative*

The Harco Chemical Co. of Cranford, N.J., manufacturer of industrial cleaning compounds, announces the appointment of Ed. F. Labadie as its Mid-West Representative.

Ed. Labadie's experience and background fit him to present and properly service the Harco line which consists of Spra-Kleen engineered water wash treatment, Peel-It strippable booth coating, and a varied line of alkaline cleaners. Mr. Labadie's headquarters will be 424 Book Bldg., Detroit, Mich.

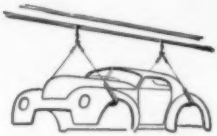
## *Hugh Crawford Becomes V. P. of Egyptian Lacquer Mfg. Co.*

The Egyptian Lacquer Mfg. Co. announces the appointment of Mr. Hugh C. Crawford of New York as Vice President.

Hugh Crawford is now V. P. of Egyptian Lacquer Manufacturing Co.

Mr. Crawford has been with Egyptian since 1937, first as sales representative for the state of Connecticut, then as director of War Production during the war years. In August, 1945, he succeeded to the position of Director of Sales, and will continue to superintend the operation of the Sales division.

# SUPER-CLEAN AIR saves up to 100 auto bodies daily



*One of two AAF Electro-Cell Precipitators filtering make-up air for auto body finishing operations. The units, equipped with automatic washers, are now in their third year of service.*

**Installation of AAF Electro-Cell Precipitators Slashes Rejects In Finishing Operation**

A LARGE producer of auto bodies desired to supply filtered make-up air for the comfort of the spray booth operators in its finishing department. Two AAF Electro-Cell Precipitators, each capable of handling 216,000 CFM at 300 FPM, were installed as a part of the ventilating system.

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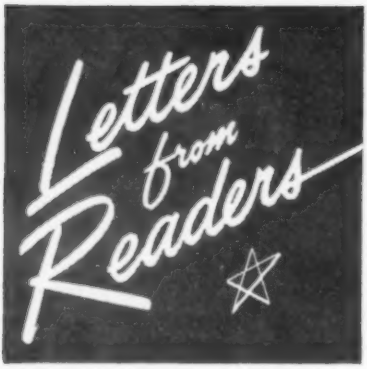


## Black Varnish; White Filler

Please advise as to the source from which I might obtain material for the black varnish and white filler, discussed on page 98 of the February 1948 issue of INDUSTRIAL FINISHING.

I will also appreciate getting the address of Selig Mfg. Co., whose modern chair is illustrated on page 96 of that same issue.—E. T.

For wood finishing materials, consult any of the wood finish manufacturers whose advertisements you see in this magazine.

The Selig Mfg. Co. is located in Leominster, Mass.—ED.

## Testing Paints, Etc.

Did you publish an article several months ago describing methods of testing the quality of paint and its adherence to the surface being finished? If so, I would like to obtain a copy of the article. —L. F.

We have published several articles on this subject. Tear sheets of a few of them are being sent you by mail.—ED.

## To Chip Off Old Paint

We are wondering if you have any information or any records of a concern or concerns who manufacture a machine for chipping old paint films off metal? We have a customer who is interested in some such equipment. We will appreciate very much any information you can suppy us. —P. F. Co.

A brief item, published in October 1939 issue of INDUSTRIAL FINISHING Magazine mentions the "Safe-Way" electric paint remover, manufactured and sold by Dumore Appliance Co., 149 Church St., New York, N. Y. Perhaps that company is the one now known as The Dumore Co. (portable electric tools), Racine, Wisc.

We seem to recall a large black and red illustrated circular of a portable rotary tool that had teeth around the edges—something like the teeth of an emery wheel dresser—for removing paint from metal surfaces—particularly thick films of caked-on paint. Seems to us that this was made by a firm in Cincinnati. However we do not recall the name of the firm and do not seem to have the tool listed on any reference cards.

In severe cases, some firms use an electrically operated hammer fitted with a suitable chisel.—ED.

## Isometric View Prepared by Geo. Koch Sons

We read with a great deal of interest in March issue of INDUSTRIAL FINISHING, the article by Fred M. Burt, "Cleaning, Bonderizing and Prime Coating Automobile Wheels". We are particularly interested in the article, since we designed, fabricated, and supervised the installation of the entire job. We note that we have not received credit for any of this, but understand that the author made himself responsible for the credits in this case.

We are astonished to find that an isometric view of the entire system was used without our permission. The art work was prepared at our request, paid for in full by George Koch Sons, Inc., and the original tracing is retained by us.—F. L. ELLIOTT, Chief Engineer, George Koch Sons, Inc., Evansville, Ind.

Mr. Burt (a resident of Los Angeles) obtained material for this article by visiting the plant of Norris Stamping & Mfg. Co., consulting those in charge, and then following through by personally contacting the people who, he understood, installed the equipment.

Referring to the isometric drawing which appears on page 58, Mr. Burt's notation reads, "Isometric drawing of complete system as engineered and installed by Industrial Systems, Inc., Los Angeles". We assume that this is the information Mr. Burt received from those he contacted. No name of any kind appears on either the front or back of the photograph, so we had no way of knowing—and we presume Mr. Burt did not know—that this drawing had been originally prepared by your organization.—ED.

## Treating Galvanized Metal Before Painting

We would appreciate your suggestion on a cleaner for bright spangled galvanized sheets, which will sufficiently etch the zinc coating so that proper adhesion can be obtained.

Another requirement is that this cleaner be applied by hand application, as the

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product on which we purpose to use it is painted after final assembly and, because of its size and bulk, it cannot be immersed.—J. F. Co.

Off hand we think of an easy name to remember — "Galva-Prep," manufactured and sold by the Neilson Chemical Co., 6562 Benson St., Detroit 7, Mich. If there are others, we will hear about it when they read this letter.—ED.

## Bowling Pin Finish

We noticed, in April issue, "Letters from Readers," page 100, that M. G. Wright is seeking a plastic finish or dressing material for bowling pins. We believe we can be of service to Mr. Wright, therefore, would like to get his full address. We manufacture a clear resin material that we believe will do the trick.—Flo-Co Products Co., Royal Oak, Mich.

In a letter we are sending you Mr. Wright's street address.—ED.

## Finishing Fish Lures

We are trying to get a start in bait manufacturing. We have some nice plugs. The body part is of plastic, and we have decided that we should put a scale finish on some of them, but we don't seem to be able to find the screen or whatever it is that is used to apply the scale finish. Can you let us know where we may get the equipment to do that type of work? —M. B. Co.

I suggest that you experiment with various materials to obtain the scale pattern you wish. These materials would include a piece of lace curtain, mosquito net or a piece of cheesecloth. The latter would have to be stretched to obtain the effect. It is my opinion that you will have better success with either mosquito net or curtain netting.

It will require a little practice in spraying, especially in blending the scale pattern into the other colors used on the lure, to eliminate a definite line along the back and on the under side of the lure. If the lure is held in correct position just within the edge of the spray along the back and under side, the overspray will fog or blend the pattern into the other colors.—X.Y.

## Acoustic Paint

We are interested in an acoustic paint to be used for deadening sound on our steel chairs. We want something that can be sprayed on underneath the metal part, so that afterward the metal will not make a noise when it is tapped or hit.—G. E. Co.

Several concerns make this material. In a letter we are submitting names and addresses of a few of them. A similar "paint" or compound is being used as sound deadener and "underseal" for automobiles and other places wherein sheet metal or pressed-to-shape metal may "sound off" with a ting, screech, rumble or vibration under certain conditions.—ED.

## Lead Pencil Finishing

We thank you very much for your esteemed letter of January 16, contents of which have been of great interest to us. [See Question and Answers in March issue, pages 96 and 98.] We further thank you for passing copies of our letter to certain American firms who make finishing materials for lead pencils. We are already offered a few finishes and we hope to find them suitable.

Still we are not finding anything in way of pencil coating equipment, and shall be highly obliged for any further information, whenever you may happen to get it. —ACME AGENCIES, Ahmedabad, India.

We understand that the equipment used by American pencil manufacturers is all special and custom built. It is not on the market. You will probably have to develop and build your own equipment, or have some qualified engineer do it for you. In a letter we are referring you to several engineers, one or more of whom might be interested in developing equipment for your purpose.—ED.

## Non-Shrink Putty for Metal Castings

In puttying slag holes or other cavities in metal castings, we have trouble with the putty shrinking and showing up the hole later. Is there a non-shrinking putty that can be safely used under lacquer?—C. Mfg. Co.

I suggest that you try a putty called "Blue Lead Glaze" made by a concern* in Newark, N. J. It is practically non-shrinking, can be force-dried, and sands fairly easily. It will air-dry, if not too deep, in two or three hours. I have used it and found it satisfactory. However, I would not recommend any putty for deep holes, if the article is to be subjected to any later heat. In this case, brazing or solder should be used. However, since your inquiry mentions lacquer as the final coat, no difficulty should be encountered. —George Conrad.

*Name and address given by letter.—ED.

## Like Granberg's Article

We wish to compliment W. J. Granberg on the fine article, "Furniture Finished in 35 Minutes," which appears on pages 85 and 86 of the March 1948 issue of INDUSTRIAL FINISHING. We are particularly interested in this article as we are

# RANDOLPH

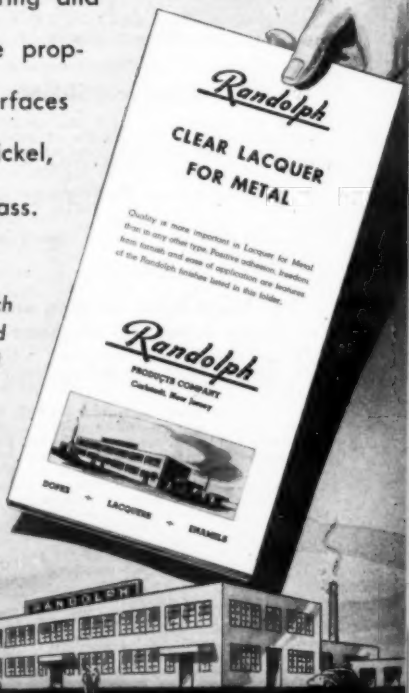
## CLEAR LACQUERS FOR METAL

### Give full protection and improve appearance

For many years the Randolph organization has specialized in producing fine clear lacquers that will give maximum resistance to moisture, grease, wear, heat, marring and provide positive adhesive properties for difficult metal surfaces such as copper, zinc, nickel, cadmium, aluminum and brass.

•

*A copy of our new folder which contains helpful, technical and factual information on all Randolph Clear Lacquers for metal and those for special requirements will be sent on request.*




**Randolph**
**PRODUCTS COMPANY**
Carlstadt, New Jersey

DOPES · LACQUERS · ENAMELS

manufacturers of this type conveyor in the Midwest.

We would appreciate receiving, at your earliest convenience, five reprints of the complete article covering this unique furniture finishing conveyor.—George Koch Sons, Inc.

## Pre-cut Circular Masks

Sometime ago we saw an advertisement or an illustrated write-up of circular masks, pre-cut from masking tape, to be used for covering bearings, etc., in painting operations. We have been unable to find this advertisement. If you know the name and address of the manufacturer or distributor, we would appreciate your forwarding the information.—G. M. Co.

An illustrated item about this was published on page 68 of March 1943 issue of INDUSTRIAL FINISHING Magazine, a tear sheet of which is being sent you by letter.

As you will note by the article, these are Kum-Kleen labels manufactured by Avery Adhesives, 451 E. 3rd St., Los Angeles, Calif. The concern has branches in Chicago, Detroit and New York.—ED.

## Want Mechanical Striper

Can you supply us with the names of manufacturers or distributors of mechanical stripers for applying gold striping to furniture and wood products?—L. K.

Try one or both of the following:

Paasche Airbrush Co., 1917 Diversey Parkway, Chicago 14, Ill.

Wendell Mfg. Co., 4234 N. Lincoln Ave., Chicago, Ill.—ED.

## We Make Roller Coating and Spool Rewinding Machines

In the "Letters from Readers," in March 1948 issue page 88, we notice that S. E. Co. asks for roller coating and spool rewinding machines.

We are prepared to quote on this type of equipment as we make roller coating machines for use with our ovens for paint, lacquers, etc., and we make reeling equipment for pulling and rewinding of metals for both our oven and furnace division.

We would be pleased if you would forward S. E. Co.'s name and address, and we will have our Chicago man call on them. Perhaps we may be able to help these people.

We are sending you our General Catalog No. 414, which shows the type of equipment we build, both in the furnace and the oven division. If we can be of any help to you at any time, let us know. —W. S. Rockwell Co., Fairfield, Conn.

S. E. Co. is located in Barberton, Ohio. In a letter we are giving you the company's full name and street address.—ED.

## Clyde Hall, New Glidden Man in Memphis Territory

The Glidden Co. of Cleveland, Ohio, announces appointment of Clyde W. Hall as a sales representative for industrial and maintenance finishes in southern territory.

Clyde W. Hall now represents Glidden Co. in Memphis and southern territory.

Mr. Hall was born and reared in the South and has had many years experience in industrial finishes. His career has included service as finishing foreman in furniture manufacturing companies, as well as service and sales work for manufacturers of industrial finishes.

The new Glidden representative, who will make his headquarters in Memphis, will be equipped to provide complete finishing service to users of industrial and maintenance finishes through the extensive facilities for research, development, and technical service of the Nubian Industrial Division of the Glidden Co., Chicago.

## Aluminum Paint Bulletin

A new 6-page bulletin printed in three colors, shows illustrations and gives practical information about the "Tuf-on Aluminum Paints" that are made and sold by Brooklyn Varnish Mfg. Co., Inc., 50 Jay St., Brooklyn 1, N. Y.

As a further aid, a handy Selector Chart is included in the bulletin, whereby an aluminum coating may be easily chosen by matching the requirements to one of the nine aluminum paints listed. The requirements are divided into properties, applications and resistance data, so that at a glance the most suitable aluminum finish may be selected.

## Mildew Preventative Paint

Mer-Q-Ree, Inc., 4723 Elm St., Bethesda 14, Md., announces that its mildew preventative (for adding to paint for prevention of mildew) has been improved and now contains 20% by weight of mercury compounds.

# You can produce on any material the following surface finishes:

## FELT - SUEDE LEATHER - MOHAIR VELOUR - VELVET - CARPET

### FUNCTIONAL USES

Used in the auto, airplane, radio, electrical, phonograph, ceramics, furniture and many other industries for surfacing all sorts of materials to provide

**TEMPERATURE INSULATION • SOUND DEADENING • INTEGRAL GASKETS • SHOCK ABSORBING SURFACE • NON-MAR SURFACE • NON-GLARE SURFACE**

### DECORATIVE USES

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—

**FURNITURE UPHOLSTERY • SUEDE LEATHER • INTERIOR AND DRAPERY FABRICS • VELVET • VELOUR • MOHAIR • CARPET**

***with these patented and trademarked Rayco specialties:***

### FELT AND SUEDE SURFACE

*"Raymix"—a flock of rayon fibres, trademarked under U. S. Patent No. 427949 to produce a suede effect of utmost realism on any surface.

*"Kingcote"—a cotton flock trademarked under U. S. Patent No. 423572, producing a suede effect at minimum cost.

### MOHAIR, VELOUR AND VELVET SURFACE

"Raycote"—a flock composed of uniformly cut rayon fibres to produce on any surface a pile effect such as velvet, plush, or velour. Made under U. S. Patent No. 2014947.

### SYNTHETIC CARPET

"Harecote"—a flock composed of animal fibres, produces a durable carpet or rug material.

***Request Free Color Card of Actual Samples***

**Rayon Processing Co. of R. I., Inc.*

**Registered Trademark*

**PIONEER PRODUCERS OF SURFACE COATING FLOCKS**

**55 Moshassuck Street** **Pawtucket, R. I.**

**POLLAK PAINT CO.**
715 Main St.
Buffalo, N. Y.

**LAMBERT-NEW ENGLAND CO.**
79 Sudbury St.
Boston, Mass.

**H. R. MEININGER CO.**
409 16th St.
Denver, Colorado

**J. GORDON SMITH CO.**
3901 Main St.
Dallas, Texas

## Lacquer Over Shellac?

We are applying lacquer over wood such as maple, pine and fir. Our present process involves one coat of sealer and then several coats of high quality gloss lacquer.

We have used a thin coat of shellac in place of lacquer sealer, and this has resulted in a better looking finish, that is, it is glossier and smoother, after the application of lacquer.

We are undecided as to whether or not to continue to use this method because the finish may not stand up too well in the field, or crazing may occur. Can you advise us in this respect?

Also, please advise as to whether or not we should confine our operation to the use of sealer for the first coat or whether it is both practical and safe to mix some shellac with the sealer for the purpose of getting a better surface on which to apply our lacquer coats.—B & Co.

---

A thin coat of shellac, used in the place of lacquer sealer, will usually give a smoother, fuller appearance to the system. This is due, in part, to the fact that the lacquer solvents of the topcoats will not penetrate the shellac as they will lacquer sealer. This gives better holdout, of course, but it also introduces the danger that the lacquer topcoats may, in time, scale off the shellac.

One solution of the problem is to get some *mixing lacquer* to mix with the shellac for the sealer coat. Most lacquer manufacturers can furnish this material. It is a lacquer especially made for blending with shellac to improve drying, flow and adhesion. Use about one part of mixing lacquer to three of 4½-lbs. cut shellac, and two or three parts of denatured alcohol. Apply the mixture as you would the shellac. It permits the lacquer topcoats to penetrate well enough so that you will never have any trouble, and yet it gives the good holdout characteristic of shellac.

Ordinarily it is not good practice to mix lacquer sealer and shellac, because some ingredients of most sealers are incompatible with shellac. While it is sometimes done, and may give good results, the lacquer sealer and shellac may separate into two layers or may precipitate out specks of material which cause trouble in getting a smooth finish. The mixing lacquer-shellac system is much better.—R. H.

---

## Alcohol Resistant Finish on Maple

I have just read the question and answer on page 110 of February 1948 issue of INDUSTRIAL FINISHING about a "Lacquer System on Maple". I see Mr. Wampler has covered many details in answering this question, but I think I can add a few points on this same trouble. In the past six years I have had a lot of experience with high-resin lacquers and flats. Let's look in three places for this trouble.

First, the wood was hard maple. In some cases the wood can be too hard and smooth to receive a finish. It has to be sanded with No. 4/0 sandpaper to "rough" it up a little, so that the stains or sealers will pene-

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SYNTHETICS VARNISHES
NEW PERIOD'S
NO. 718 CLEAR LACQUER
Our customers say it is the finest rubbing lacquer on the market.
Has excellent build, adhesion, flexibility and durability.
Is crystal clear, hard to mar and alcohol resistant.
Rubs to a beautiful clear gloss finish.
Economical to use.
NO. 910 SATIN LACQUER
Has all the fine properties of No. 718 including clarity and does not contain the usual cloudy flatting agent.
Dries to a beautiful satin finish.
We regard our No. 718 Clear and No. 910 Satin as the finest lacquers ever developed by our laboratory!
ORDER 5 GALLON WORKING SAMPLE AT DRUM PRICE
MANUFACTURERS OF FINE PRODUCTION FINISHES
NEW PERIOD Production Finishes
ESTABLISHED 1917
NEW YORK WOODFINISHERS' Supply Co.
109 IMLAY STREET BROOKLYN, N. Y.

trate into the wood. This is important. This calls for the first coat of lacquer sealer to be very thin to make good adhesion and anchorage to the wood. This is where you can make a good finishing job—or a bad one. Sand this first coat with No. 6/0 sandpaper until the surface is perfectly smooth. Put on a second coat of lacquer sealer, "plenty wet". Sand with No. 6/0 sandpaper until smooth.

Second, here is where the orange peel most likely started—when putting on two coats of gloss lacquer. The first coat, applied over the sealer coat, was probably too heavy—and it "orange peeled". No high gloss lacquer coat should be sanded when other coats are to be used as top coats. Each coat added over the one with the orange peel effect makes the orange peel appearance get larger.

Third, gloss lacquers should not have been used where flats are being used as top coats, because the solvents used to thin the flats penetrate into the bottom coats and soften them again. Then the flat coat, used as a top coat, dries before the softened gloss coat, causing a contraction which gives the effect of wrinkle or alligator finish. The top coat that was 50% gloss and 50% flat should not have been sanded. This breaks the film which is supposed to flow out uniform, to provide a smooth base for the alcohol resistant lacquer.

I would like to give a few pointers on the system I have always used on any hardwood that has no pores or open grain—such as maple, beech, etc.

1) Check the wood to see if it has a hard glassy surface. If so, sand it with No. 4/0 sandpaper to "rough" it up a little.

2) Stain or leave as is, depending upon the finish desired.

3) Spray on a thin coat of lacquer sealer. When dry, sand the sealer coated surface perfectly smooth with No. 6/0 sandpaper.

4) Spray on a wet coat of lacquer sealer. Sand with No. 6/0 sandpaper.

5) Spray on a lacquer consisting of 50% gloss and 50% flat lacquer.

6) Apply a coat of alcohol-resistant lacquer.

7) Add another coat of alcohol-resistant lacquer—flat or gloss, whichever sheen is wanted. — FRANK J. GREEN.

## How Long Will Screen Stencils Last?

We are about to produce a metal awning and we are contemplating printing stripes on it by using silk screen stencils. One deterrent feature is that we can get no accurate information as to the probable life of a silk screen stencil. Some sources say all we can expect is 1,000 imprints per screen; others say 40,000. Assuming average good care of them, what would you think are the minimum and maximum imprints of a screen stencil when used to print stripes on our awning? If you are unable to reply, could you direct us to an impartial source?—C. L. MFG. CO.

For silk screens, the silk screen ink department here at Sinclair & Valentine informs me that a good silk screen, with normal care, including prompt washing, clean storage, etc., should last through 10,000 impressions easily. It could almost be guaranteed when proper care is taken. The maximum is not definite, but 30,000 to 40,000 impressions would not be out of line. We have several cases where over 50,000 impressions have been made.—H. H. WATJEN.

I do not believe you would be satisfied with the silk screen method of applying stripes, which would be slower than other methods. The length of life of your screens cannot be determined without actual tests with

# 11 REASONS WHY

## NATIONAL CASEIN'S *is the preferred* Wood Repair

✔ No Obnoxious Odor

✔ Handles Easily, Like Putty

✔ Contains no Oils to Interfere with Stains

✔ Formulated to Last as Long as the Wood

✔ Sands Easily

✔ Formulated Against Shrinkage

✔ No Waste

✔ Economy with Performance

✔ Made to Match a Dozen Finishes

✔ Takes Stains Readily

✔ Won't Fill Sandpaper

SAVE time . . . SAVE labor . . . protect work in process against failure to pass inspection . . . avoid customer complaints on finished product. Use National Casein's Wood Repair to fill cavities or cracks. Simple to apply, quick to set, easy to finish, guaranteed to last as long as the wood when applied according to directions.

CONVINCE yourself. Send 25c for a generous ½ pound sample of any of 12 available wood colors, or white.

**NATIONAL CASEIN GLUES:** Hi-quality • Hi-strength Non-staining • Marvelous working qualities Easy on knives • Water resistant • Free-flowing.

**NATIONAL CASEIN RESIN GLUES:** For both cold bonding and hot press work • Non-staining • Water and weather-proof • Handy for either shop work or general assembly line.

**NATIONAL CASEIN SALES** Eastern Division 601-19 West 80th Street Chicago 20, Illinois

**NATIONAL CASEIN CO.** Broad & Fulton Sts., Riverton, New Jersey

your employees, type of frames, base materials, etc.

I believe you would have better luck with rollers made of gelatine, rolled over an inked plate, and then rolled across your product. The ink can be formulated to bite into your base paint and leave a high gloss finish.—W. BEACHAM.

## Paint Lasts 20 Years?

I know of a concern who is instructing its salesmen to say that their baked enamel finish will last 20 years without repainting. This statement is, to me, so far off base that I am writing to ask you if you know of any new paint or new process that would so prolong the life of an enamel, particularly when it will be constantly exposed to the weather.—C. N. Co.

We know of no such material.—ED.

A paint company making those statements, should be tied in writing to do your repainting when needed for the next 20 years. Of course, there are several ways of looking at their claim. In any event the paint company has several "outs". When the paint does not stand up, the company representaive may declare: "That's not our paint, it was not applied as we recommended; or the film was not thoroughly baked."

The most expensive paint I know of, is a silicon-base material that sells for $25.00 per gallon. It is manufactured to resist damaging weather conditions. This material lengthens the time between painting under certain fume conditions from six months to as much as three years, but there is no guarantee.

I would suggest coating strips of your metal under *your shop conditions* with samples of paint reduced to the viscosity recommended by each individual paint company. Then have the painted strips tested by a local testing laboratory for weathering, abrasion, hammer blows, scratch and salt spray. The cost of these tests would probably run between $100.00 and $200.00, which would be a great deal cheaper than having the finish of your products peel or "go bad" in some way soon after it is installed.

The metal to which the paint is to be applied must be taken into consideration. If steel, is it cold rolled? Do you degrease it, and if so, what is your method of degreasing? If it is aluminum, or an alloy, what is the number—AL-1, AL-2, AL-5, or is it a zamak? How many minutes between etching and finishing? What material are you using for the etch?—W. BEACHAM.

On the baked enamel, most quality finishes of this type will last an average of five years. It is exceptional for a baked enamel to last longer than this without chipping, yellowing, etc., to some degree. The only new finish that occurs to me, that might last longer, is one of the silicone varnishes. However, the price is about $25.00 a gallon. The life of these varnishes is unknown to me.—H. H. WATJEN.

**Product Finishes—**

Finishes that are easy to apply — that can be dipped, sprayed or roller coated on metal, wood or plastic products with equal success — finishes that either bake or air dry to a tough smoothness — finishes that give uniform results in application, that cover small surface defects, reduce rejects to a minimum and — finishes that give your product outstanding sales appeal. Submit your difficult finishing problems to YARNALL for speedy, efficient solution.

**"PRODUCTION PROVEN"**
**YARNALL INDUSTRIAL FINISHES**
For durability, beauty and protection—for faster and more economical application, use

DIPPING AND SPRAYING ALUMINUM
FLOCK ADHESIVE UNDERCOAT
WOOD AND METAL PRIMERS
YARLAST EXTERIOR ENAMEL
YARLITE BAKING ENAMEL
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THE SHIELD OF PROTECTION

YARNALL PAINT COMPANY
*Industrial Division*
PHILADELPHIA • • • • PENNSYLVANIA

## To Keep Uniform Colors

We would like to get information as to any instrument or processes available that would enable us to check colors. We manufacture a line of juvenile furniture in colored enamel finishes, and it is important that we keep our finishing colors uniform from year to year. We would want this instrument or process, if it were available, to help us check the paint color before we actually spray it on the furniture.—M.F.Co.

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There are a number of instruments which can be used to express color in numerical terms. However, they are all expensive and require a highly trained operator. The Hunter Reflectometer, made by the Henry A. Gardner Laboratories, 4723 Elm St., Bethesda 14, Md., is one of the simplest and least expensive, but it requires a highly skilled operator. I do not believe there is any instrument available which is really practical for most industrial users of enamels.

The most practical method I know of is for you to retain a wet sample (about one gallon) of each color. Better yet, retain about six pint samples of each color. Let these be your master standards. Then check each shipment of enamel that comes in, against the proper master standard. These master standards may be renewed occasionally with materials that you are sure are correct. The reason for keeping several small samples of each standard color is because you always have on hand fresh unopened standards which you can check in case of doubt.

It is important for you to realize that the color of enamel will "drift" after it is applied to your furniture. If it is exposed to the light, it may gradually go in one direction; if exposed to darkness, it may go in another. This "drift" may take place continuously over a period of years. Therefore you can not get a fair test of the color of a fresh shipment of enamel by comparing a fresh panel to a piece of furniture that has been finished for weeks or months. Comparison to wet standards is the only practical method.

Of course, some enamels will "drift" in color more than others. It might be will to ask your supplier for enamels that will show the least possible color change.

This matter of color "drift" in enamels is a very complex one. It is imperfectly understood by even the most competent manufacturers of enamels. Comparison of incoming shipments to wet retained standards is the only practical method of control. These comparisons must be visual, and should be made by skilled operators under carefully controlled conditions.—R. H. WAMPLER.

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### *Tenax Finishing Products, Inc., A New Concern*

Mr. Kenneth Kern, formerly chief chemist of a manufacturer of finishing materials, and Mr. Albert J. O'Neill, formerly on the same firm's sales staff, announce the establishing of their own business devoted to the manufacture of product finishes, synthetic enamels, lacquers and technical coatings of a specialized nature. They will operate under the name, Tenax Finishing Products, Inc., at 420 Adams St., Newark 5, N. J.

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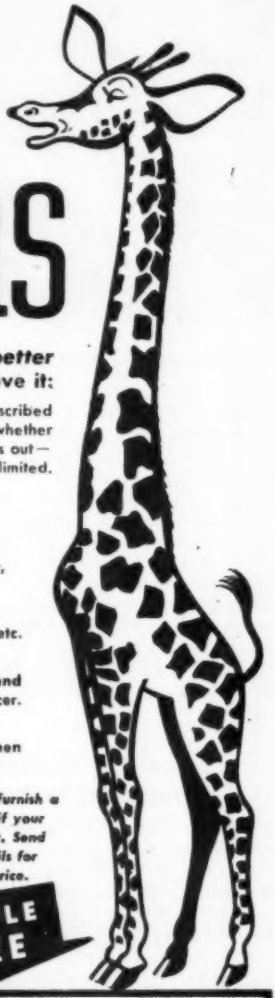
### *Midwestern Mfg. Co. of N.Y. Joins With Optimus Equipment*

Optimus Equipment Co., Matawan, N. J., manufacturer of metal parts vapor degreasers, washing and drying equipment, announces the joining of that company and the Midwestern Mfg. Co., of New York, N. Y., manufacturers of vapor degreasers.

The Midwestern line of vapor degreasers and degreasing solvents will be continued, supplementing the present line of Optimus products. The company will continue under the name, Optimus Equipment Co., with headquarters and manufacturing at Matawan.

Officers of the new company are: V. W. Todd, chairman of board, M. Jaffa, president, A. T. Baldwin, vice-president, E. N. Close, secretary and treasurer.

# HIGH QUALITY
## LOW COST
# THINNERS



**Grade for grade, S-I-P Lacquer Thinners offer *better quality* at *lower cost*. Here's how you can prove it:**

Send for FREE SAMPLES of any of the five S-I-P Thinners described below. Test them, compare them, *then* make up your mind whether they will save you money. *You* risk nothing – it's *our* neck that's out – but *do* send for your free samples today, for this offer is limited.

**LT 2725**
Maximum *economy* in a *good* lacquer reducer!

**LT 2726**
If you need an all-around general purpose lacquer thinner, this one is hard to beat.

**LT 2727**
An excellent reducer for automotive and furniture lacquers, etc.

**LT 2728**
Recommended wherever blushing is normally encountered and maximum lacquer flowout is necessary. A high quality reducer.

**LT 2729**
Highly efficient lacquer retarder, for use with any lacquer when necessary to eliminate blushing.

*We will gladly furnish a special thinner if your work requires it. Send complete details for sample and price.*

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EVANSVILLE 4, INDIANA

Attach this coupon to your letterhead, indicate numbers of Thinners interested in, and we will send samples and prices for testing and comparison, without cost or obligation.
*Standard Industrial Products, Evansville 4, Ind.*

## Oil-Resistant Metal Lacquer

A new metal lacquer has been developed by the Dennis Chemical Co., 2701 Papin St., St. Louis, Mo., for use where oil resistance, toughness and maximum adhesion are required. Dennis No. 5062 lacquer will withstand 24-hour immersion in gasoline and 15-minute immersion in hot oil (275° F.) with no apparent deterioration in film strength or gloss. This coating has excellent adhesion to a variety of metal surfaces and has found particular application over "cronak" treated metals. A complete line of colors is available.

---

## Prot-O-Cel Process is Announced by Arny

A new line of industrial finishes, formulated especially for the furniture and woodworking industry, is announced by the industrial division of Arny Chemical Corp., 55 W. 42nd St., New York, N. Y.

The new product is known as Prot-O-Cel and is the result of intensive research and development by the company's experienced staff of chemists and laboratory technicians. The product derives its name from a protein ingredient which acts as a unique binding agent and becomes an integral part of the wood itself. One application of the new finish serves both as a sealer and a base coat. Fewer applications are required to obtain a desired finish. Its use makes sanding easier and eliminates entirely the need for sanding surfacers.

Prot-O-Cel features ease of application, free flow and excellent coverage by either brush or spray, great adhesion, resistance to water, fruit acids, alcohol, oil, perfume, ink, etc. It is also highly resistant to heat and cold. It dries quickly to a hard, durable and marproof finished surface. A lower degree of inflammability due to a considerably higher flash point makes it a safe finish to use.

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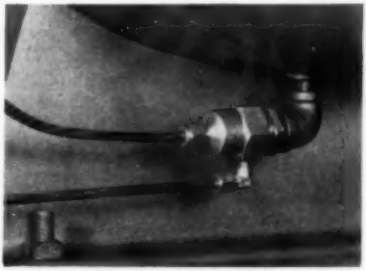
## Removes Water and Oil from Compressor Tank

A fully automatic water unloader, which removes all water and oil from the air compressor tank, is announced by A. Shelburne Co., 739 Ceres Ave., Los Angeles 21, Calif., manufacturer of paint spray guns and spray gun equipment.

Designed to fit any electrically operated air compressor which is equipped with a centrifugal or mag-



The new fully automatic water unloader removes all oil and water from the air compressor tank, completely eliminating manual draining.

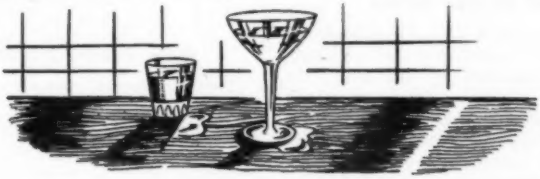
# SPRUANCE QUALITY

SINCE 1906

ALCOHOL RESISTING

## *Furniture and Bar Lacquer*

SHEENS VARYING FROM HIGH GLOSS TO FLAT



- HIGH GRADE DURABLE FINISH
- COLD CHECK RESISTANCE
- LASTING BEAUTY

Maybe we have the answer to your Finishing Problems. We invite your inquiries and cheerfully offer the facilities of our technical staff.

## The Gilbert Spruance Company

RICHMOND AND TIOGA STREETS
PHILADELPHIA 34, PENNA.

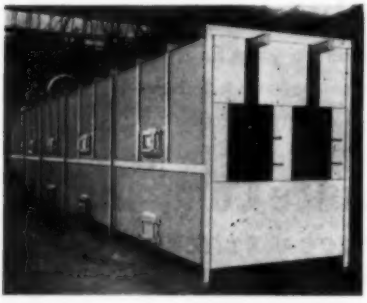
netic unloader, the Lansdale Water Unloader eliminates manual draining of tank by automatically drawing off the harmful water and oil as it collects. By eliminating this accumulation, the possibility is avoided of its being forced into the air lines, thus causing corrosion or clogging of tools or spray mixture.

As a means of filtering out particles of rust and dirt and preventing possible damage to the unloading mechanism, the unloader has a wire mesh screen inserted ahead of the mechanism. The device is easily installed.

## Cleaning, Rustproofing, Rinsing and Drying Setup

Alvey-Ferguson Co., Cincinnati 9, Ohio, recently developed, for a manufacturer of heaters, an enclosed twin setup that performs five operations to prepare sheet metal parts for painting. The following steps are performed in a continuous, automatic cycle: two thorough-wash and phosphate coating operations; a clear water rinse; a mild chromic acid rinse, and a drying operation.

The machine designed for this process was kept reasonably compact when viewed in terms of the tremendous amount and size of material handled. By connecting the equipment's built-in trolley-type twin line of A-F conveyors with the plant's overhead conveying system, the machine becomes an integral unit in the completely coordinated production system.



Cleans, rustproofs, rinses and dries metal parts in preparation for paint coatings.

The machine is 56-ft. long, 9-ft. high and 6½-ft. wide, and has two parallel overhead conveyors running its entire length, but separated by a center partition. This provides for double production in the given space and is typical of the "twin" design technique pioneered by The Alvey-Ferguson Co. Pumps, tanks and other facilities serve both sides for savings in equipment and operating materials.

## New Metal Cleaners

Two new metal cleaners, said to be effective individually or in combination for cleaning a wide variety of metals and alloys, are announced by Calgon, Inc., Pittsburgh, Penna.

Calgon Metal Cleaner No. 21 is a dry granular alkaline detergent for spray-cleaning in metal-washing machines. In addition, it has proved effective when used in combination with the new Calgon Emulsion Cleaner, for immersion cleaning in dip tanks and for heavy-duty spray cleaning. Effective temperature range for its use is wide, 140° to 180° F.

Calgon Emulsion Cleaner is described as a white, creamy emulsion of an organic solvent in a relatively small amount of water. It readily disperses when added to the cleaning bath. It is useful in a combined solution with Calgon Metal Cleaner No. 21 for immersion cleaning or especially difficult spray-cleaning. This mixture or combination of the two cleaners is said to provide the merits of an alkaline cleaner with those of an organic solvent. Temperature range is 140° to 160° F.

*Cellusuede*
**FLOCK**

The Coating Material
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The millions of tiny Rayon Fibers of Cellusuede Flock, aid materially in obtaining the maximum acoustical value of Radios, Testing Equipment, Television sets, and countless other Radio and Electronic devices. Cellusuede can also be obtained coated on paper, die cut to any shape or size, and in sheets or rolls.

This easy to apply material will add beauty and utility to your products.

*Write for color cards and samples.*

CP *Cellusuede Products, Inc.*
ROCKFORD ILLINOIS

## Valdura Paints Resist Mold and Mildew

All major Valdura paint products now come with a mold and mildew resistant formulation at no extra cost, according to M. J. Monahan, technical director of American-Marietta Co., Chicago 11, Ill.

"Baking, bottling, brewing, laundries, textile mills and canneries—in fact, all industries affected by the bacterial spore causing mildew and mold—will be interested in American-Marietta's new policy of adding the mold and mildew inhibitive to paints as a standard part of the formula," said Mr. Monahan. Paint workability and life are in no way affected by the mold and mildew resistant formulation, according to Mr. Monahan.

Mildew is a result of an airborne bacterial spore which attacks a freshly painted surface and feasts on the paint oils. It thrives in rooms or parts of factories and plants that are damp and humid. At first, only discoloration results but the growth of fungus begins and soon the wall or corner is dark with the greenish fuzz which indicates that the mold and mildew have become established.

This picture shows interior of gas-fired (infra-red) radiant heat oven in the plant of Structo Mfg. Co., Freeport, Ill. Products on which the paint coating is being baked, are metal toys. These toys have been dip-coated, and drained before entering the oven where the paint coatings are baked for five minutes at 290° F.

According to the manufacturer the present setup for baking the finish on these toys is responsible for increasing production from 6000 to 8000 units per day.

Photograph, courtesy of Burdett Mfg. Co.

## Duratex Protective Coating Increases Pipe Life

Duratex, which is currently used by several large utility and oil companies, is now available to general industry, it has been announced by National Petroleum Sales, Inc., 315 W. 9th St., Los Angeles, California.

This new protective coating has exceptional resistance to electrolysis and corrosion. Also, it has great ductility to withstand severe earth shock or movement, and because of its unusual stability earth pressures will not cause it to "slump" or "creep."

Duratex's high flash and fire point (in excess of 500° F.) adds to its safety factor during application, as does the fact that it is non-toxic. It is easy to apply and will not settle out or "coke-up" after repeated reheating or re-tempering and does not require agitation.

Alkalis and soil acids have no appreciable effect on Duratex and it has a very high bonding characteristic to metal or concrete.

# Safe Speed with....

## PERMANENT COLOR AND DURABILITY

RED X DURAFILL FUSION-TYPE FINISH

Speed with safety is the "looked for" quality in modern finishes. Colors should be clear, deep, brilliant, non-fading and non-bleeding . . . the dried film must be tough, durable and resistant to cold checking . . .

DURAFILL "Fusion-Type" Finish makes this possible by combining non-fading dye stuffs and pigments with synthesized oils that permit re-coating with lacquer sealer as soon as the DURAFILL has been wiped off and cleaned up, thus "fusing" the entire finish into one coat from wood fibers up.

In this way the expense and delay of staining, wash coating, sanding and filling are eliminated. All four jobs are done in one . . . with an improvement in quality. Get the full story on Reliance Fusion Type Finishes.

*Write for interesting folder—"Finishing Time Reduced to 5½ Hours."*

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RELIANCE VARNISH CO.
INCORPORATED
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### *New Non-Slip Blow Gun*

A new blow gun has been added by the Lonn Mfg. Co., to its line of Water Savers, Fluid Savers and Air Savers. This new gun is designed with rubber ridges to prevent it from slipping out of the user's hands when they are oily or greasy. These functional ridges are moulded in the oil and solvent-resistant Neoprene which is used in all Lonn blow guns. Specifications and prices on all Lonn piston-type Air Savers are contained in a new catalog which may be obtained upon request to the Lonn Mfg. Co., 131 E. New York St., Indianapolis 6, Ind.

### Aluminum Double Action Treatment

Alumatreet is a new product which cleans the dirtiest aluminum and at the same time creates an absorptive crystal coating. The resulting double action also assures a "tight paint lock" free from the possibility of blisters and peeling, thereby increasing the life of the paint coating.

Before and after treatment (one half before and one half after) of an aluminum wheel.

It may be used for removing dirt and oxide and restoring any aluminum casting or other alloys of aluminum. If the treated surface is deeply scratched after being painted, corrosion may occur in the scratch but it will not spread and affect the adjacent paint.

Alumatreet gives a ductile nonmetallic coating that does not flake even on light gauge aluminum which is readily damaged by bending or denting. It may be used as is, with no surface preparation on bright metal, and no after drying except wiping with a rag to remove any excess residue. This new material is a product of Farrelloy Co., 1243 N. 26th St., Philadelphia 21, Penna.

### Lithgow Air-Drying Coating Needs No Primer

Easier application, without primer, increased corrosion-resistance efficiency, and durability are among the factors that feature a new product, "LC-600," of Lithgow Corp., 333 W. 40th Place, Chicago 9, Ill. It is for use in tanks, fermenters, carbonated beverage equipment, driers, pipe fittings, filter bodies, bottling equipment, and scores of other uses in pharmaceutical, food products, paper and pulp, breweries, and chemical industries.

LC-600 embodies important newly developed properties based on inert synthetic resins. It may be sprayed, dipped, flowed, roller coated, or brushed on almost any clean unpolished, de-rusted surface.

It is positively resistant to acids, alkalies, chlorides, oils, salts, oxygen and alcohol solutions. Electro-chemical corrosion is inhibited by its high dielectric strength. It contains no vegetable oils causing oxidation, or deterioration with age. It is odorless and tasteless.

Complete information may be had by addressing Lithgow Corporation.

*Watson-Standard*

has a Universal

**WET PRINT VARNISH**

**that:**

1. Works over all types of ink. EITHER WET OR DRY.
2. LEVELS out over any type or color ink.
3. GIVES BETTER DEPTH TO COLOR.
4. WILL NOT WRINKLE, GO FLAT OR BLEED.

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***Prescription Finishes***
*Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.*

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# SAVE TIME MONEY PAINT AIR with the NEW M

**HERE'S HOW...** The New Brake Shoe Micro-Spray gun gives you more efficient, faster paint distribution by spraying with less cubic feet of air per minute at lower pressures. Though you actually use less paint, a smoother, better finish results through finer atomization, and more even distribution. The secret is . . . uniform flow of air and paint.

Detrimental effects from air pressure drop and eddy currents have been eliminated by designing ample air passages in the Micro-Spray gun body. Air distributors in air cap wing jets make it possible for you to maintain a perfect pattern even at the highest spray pressures. Thus the painters' bugaboo, fishtail or split in spray pattern, has been eliminated.

Another special feature is the highly accurate control of spray width provided by the angle of the needle. One revolution of the adjusting knob changes the air flow only to a minute degree.

Use the Micro-Spray gun for only *one* da and you, too, will become an enthusiasti booster.

**MORE COMPRESSED AIR POWER FOR LESS MONEY**

When selecting an air compressor pick the one that delivers more compressed air power per horsepower. Then you'll buy a Kellogg-American with its many new, exclusive features.

WRITE *for complete information to America Brake Shoe Co., Kellogg Division, Rochester 9 New York.*

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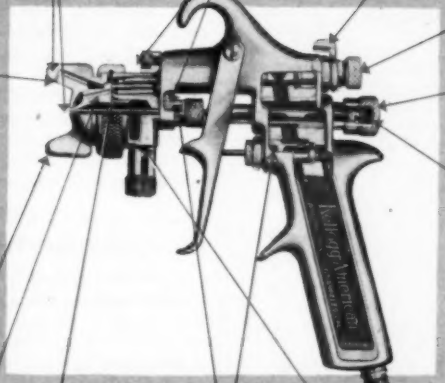
# Brake Shoe

# MICRO-SPRAY GUN



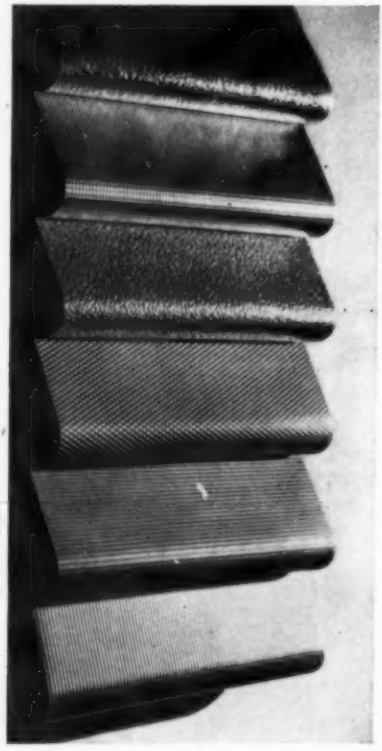
1. ves Money, ves Paint, Saves , Sprays Faster
2. Gives New, Smoother, Higher-Gloss Finish
3. Demountable Head
4. Quick Finger-Tip Control of Overall Air Volume
5. Accurate, Fine Adjustment of Spray Width
6. Fainail, No Split Spray Pattern
7. ires Spray Needs ver full Range of int Spray Materials
8. ions or Pressure praying from each pray Head Assembly
9. Instantaneous Change from Horizontal to Vertical Spray Pattern
10. Self-Adjusting Packing
11. Damage and Wear Reduced at Air and Fluid Connections
12. Better Balancing Reduces Fatigue
13. Quick, Easy Removal and Cleaning of Fluid Needle Assembly
14. One Fluid Needle Only Required for All Paint Spraying

**Brake Shoe MICRO SPRAY Gun Alone Brings You These 14 Advantages**

## Embossed Sheet Aluminum

The Reynolds Metals Co., Louisville 1, Ky., is now producing an entirely new and different type of embossed aluminum sheet. The company's aluminum sheet mills are now set up with matched roller-die embossing machines to emboss decorative patterns in aluminum sheet as shown in the accompanying cut.

Advanced equipment permits embossing prices ranging from only 2 to 3½ cents per pound above the price for plain sheets. The added qualities which embossing gives to aluminum sheet, however, more than offset this small additional cost. The great savings possible in finishing alone make embossed aluminum extremely attractive economically.



Some of the attractively embossed patterns that are now available in sheet aluminum.

## Prime Coat Has Excellent Corrosion Resistance

Dennis Chemical Co., 2701 Papin St., St. Louis, Mo., announces the development of Perma-Skin Underprimer—a quick-drying anti-corrosive underprimer that combines metal surface treatment with high anchorage of top coats and excellent adhesion to a variety of metal surfaces.

Although Perma-Skin Underprimer is an air-drying material, it has excellent adhesion. On ferrous surfaces corrosion is inhibited by phosphatization and action of the contained pigments, resulting in a strong bond and protection against underfilm corrosion. The underprimer can be used with practically all conventional finishing materials, such as oleoresinous paints, alkyds, baking enamels, lacquer, etc.

## "Pyra-Prep" Primer-Sealer

An improved line of "Pyra-Prep" primer-sealers, for use under automotive finishes, is announced by the Du Pont Co., Wilmington 98, Delaware.

Designed for refinishers and owners of automotive fleets, the new "Pyra-Prep" may be used under nitrocellulose lacquers as well as synthetic enamels.

Formerly the Du Pont Company made "Pyra-Prep" only for use under "Duco" nitrocellulose lacquer and other finishes of the pyroxylin type, and "Make-Ready" undercoat for use under "Dulux" synthetic resin enamel and similar finishes. The "Make-

# MAR-PROOF LACQUER

SCHAEFER'S Mar-Proof Lacquer is a performance-proven finish that cannot be easily marred or scratched.

It's tough—tougher than the ordinary lacquers; meets the most critical requirements of current production.

Made in either clear gloss rubbing or satin finish, it produces a splendid transparent coating of full depth on maple, walnut, gum, mahogany and other cabinet woods.

Economical; gives plenty of coverage and dries quickly. Our Mar-Proof Lacquer Sealer is recommended with it for a first-coater.

*Working samples furnished without obligation. Write for them!*

**THE SCHAEFER VARNISH COMPANY, INC.**
**Louisville, Kentucky**

SCRATCH-PROOF

MAR-PROOF

STANDS LOTS OF ABUSE

Ready" line has been discontinued, as laboratory and field tests have shown that the new "Pyra-Prep" may be used under either type of finish. It is produced in three shades: white, light gray, and dark oxide.

The Finishes Division's test show that the new "Pyra-Prep" primer-sealers have good sealing and adhesion properties. In addition, they promote uniform gloss in the top coat, and aid in preventing sandpaper scratches from showing through the final finish. They are marketed in quart, gallon and 5-gallon containers.

## Acholoid Emulsion Cleaner

Acholoid Emulsion Cleaner is a new development in emlusion cleaners to replace hydrocarbon and chlorinated solvents. It can be safely used on all metals and is especially desirable for cleaning buffed zinc-base die castings or aluminum parts which would be stained by prolonged immersion in alkali cleaners. Acholoid Emulsion Cleaner has special surface active agents which impart to it a high degree of emulsifiability, wetting and penetrating action, and rapid rinsability. It is classed as a safety solvent with a flash point of 100° F. Operation is at room temperature. Ordinary steel tanks are used to hold the cleaner. It is a product of Apothecaries Hall Co., Waterbury 88, Conn.

## Enduring Aluminum Paint for Outside Exposure

Exclusive blending of special processed Gilsonite asphalt and synthetic resin with tung oil is the secret that makes Valdura asphalt aluminum paint 98% waterproof, according to M. J. Monahan, technical director of American-Marietta Co., Chicago, Ill.

The special asphalt is nature's most enduring weather-proofing substance. This, together with synthetic resin and tung oil vehicle used in Valdura asphalt aluminum paint, makes the asphalt aluminum paint durable and wear resistant for a long time.

Five years service can be expected with one coat of Valdura asphalt aluminum paint over properly primed metal; two coats of the paint give considerably longer wear. This paint is especially adapted for use on bridges, tanks, roofs, stacks, buildings, metal, wood, concrete—wherever a silvery, protective "coat of metal" is desired. The paint can be applied by brush, spray or dip, and the average coverage is 600-sq. ft. per gallon (depending on the surface). It withstands severe temperature changes, rain, snow, ice, salt, sub-zero weather, or tropical heat.

## New Coating for Fabrics Has Many Features

Production of a new economical vinyl resin coating combining flame-resisting qualities with exceptional abrasion and weathering characteristics is announced by Monsanto Chemical Co., St. Louis 4, Mo.

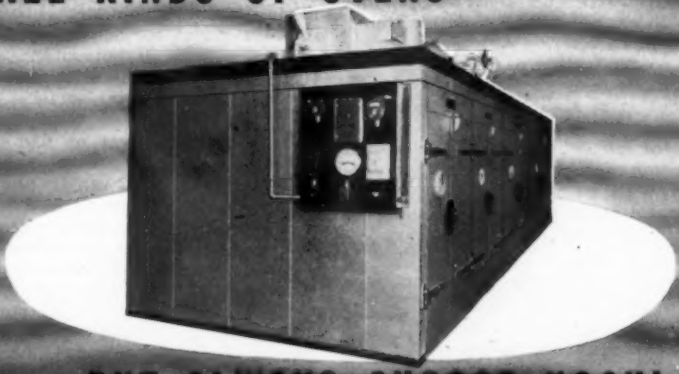
The announcement of the new product named Ultrasol, was made by Josiah B. Rutter, Monsanto vice-president and general manager of the company's Merrimac Division in Everett, Mass.

Ultrasol-coated fabrics are similar in appearance to the more common nitrocellulose-treated products. Applied to paper or fabric, it gives either a smooth, colorful finish or a decorative leather-like effect. It is equally effective in bright colors or pastel shades.

Monsanto's tests have proved the new product's capacity for withstanding abrasion, hard use and moisture. Ultrasol offers distinct advantages as

# GEORGE KOCH SONS, INC.

## ALL KINDS OF OVENS



## —BUT ALWAYS CHOOSE KOCH!

You can buy these KOCH-ENGINEERED truck type baking ovens right off our assembly line in standard basic units at our standard price. The basic unit may be increased in width or depth, when production demands call for expanded facilities.

In other words, you get the advantages of ovens tailored to fit your needs, yet standardized to fit limited budgets.

Phone, wire or write outlining your oven problems!

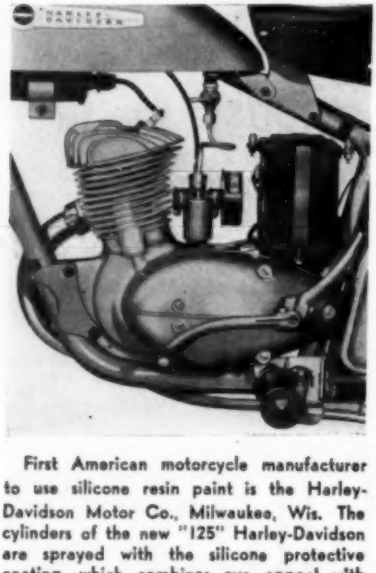
GEORGE KOCH SONS, Inc., EVANSVILLE 4, INDIANA

# COMPLETE FINISHING SYSTEMS

a surface coating for restaurants and cocktail lounges, plus upholstered walls and modern decorative effects. Highly resistant to alcohol, acids, alkalies, vegetables and body oils, Ultrasoled materials are washed easily with ordinary soap and water.

An important factor in selection of upholstery for busses, trucks and convertibles, the ability of fabric to remain flexible at temperatures below 20° F. was one of the determining criteria in tests on Ultrasol.

Another feature of the new product lies in its resistance to fire. Ultrasol, according to the Monsanto tests, will not support flame. Applied to untreated fabrics, Ultrasol retards burning considerably. Used in conjunction with properly treated fabrics, Ultrasol coverings can be made practically fireproof.



First American motorcycle manufacturer to use silicone resin paint is the Harley-Davidson Motor Co., Milwaukee, Wis. The cylinders of the new "125" Harley-Davidson are sprayed with the silicone protective coating, which combines eye appeal with waterproof and heat-resistant qualities.

## Metal Repair Putty

A new putty-like product which hardens into metal is announced by Rocket Distributors, Inc., 209-14 41st St., Bayside, N. Y., the exclusive agents for the product "Railmetal" which is manufactured by Atomized Materials Company of Pittsburgh, Pa. Railmetal is all metal processed into a plastic compound containing an acid fluxing agent which etches its way into the metal surface in a manner similar to that of hot solder. It is easily applied with a knife. Railmetal adheres to bare metal surfaces with great bond strength.

It requires no heat or flame and resists water, oil, grease, gasoline, alcohol, etc.; hardens rapidly and may be wet or dry sanded or filed within a few minutes; expands and contracts with metal to checkmate temperature changes and sudden impacts. When applied in a thin coating, it is flexible and may even be sprayed when properly thinned with Railmetal solvent. Railmetal solvent is available for thinning or reactivating Railmetal which has become hardened and is excellent for smoothing out any rough finishes. A thin coating will function as a waterproofer and rust inhibitor.

## New Adhesive Glues Anything; Resists Everything

Plastics, wood, metal, rubber, leather, crockery, glass, mirrors and labels can now be easily adhered to themselves or to each other on an efficient production line basis by a versatile and powerful vinyl-base cement, according to an announcement by the manufacturer, Schwartz Chemical Co., Inc., 326 W. 70th St., New York 23, N. Y.

The company reports that two years of continuous research has resulted in the development of an efficient all-purpose transparent water-

white cement that is easy to apply and does not effect the material to which it is applied—mirrors and thin plastics included. Called Rez-N-Glue, this new adhesive is said to dry fast but not too fast for handling large pieces.

The colorless cold-setting adhesive should have considerable interest to the industrial world because it requires only a one-surface application, has a good wet "grab", remains permanently flexible and will not become brittle. It can be easily applied by brush, roller or spray and is resistant to water, oil, gasoline, vermin and mould. The manufacturer states it is completely non-staining and has excellent tensile strength. Now available in gallon cans as well as in steel drums.

## Fast Paint Stripper

A new development in cold dip paint strippers is announced by the London Chemical Co., 607 S. Dearborn St., Chicago, Ill. This product, identified as Kwikstrip, is a non-ionic stripper which can be used as a cold dip or applied by brushing to remove any organic finish from all metal surfaces including aluminum, zinc, magnesium, or cadmium; and also from wood surfaces, as it is non-grain raising. It is non-inflammable, does not give off any obnoxious fumes, and maintains its efficiency for an unusually long period as it contains no diluents and has incorporated in it an evaporation retardant.

Plant tests under various operating conditions have brought out one interesting characteristic of Kwikstrip, as indicated by the remarkable speed with which it performs a complete job of stripping. On high-bake wrinkle finishes it has substantially reduced the time required for a thorough stripping operation.

It is a water-soluble product and is readily rinsed off with water spray, leaving the metal surface clean and ready for refinishing. It does not require constant immersion to perform the stripping operation as the piece to be stripped can be merely dipped in Kwikstrip and removed at once, allowing the stripping action to be completed in a matter of seconds.

## Clean Moisturized Air

The new Model 600, Fresh'nd-Aire Humidifier, uses a unique waterfall action to filter, wash, and moisturize the air in homes, and offices and work rooms.

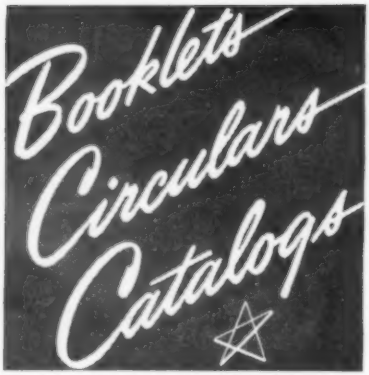
In the unit a compact electric motor drives both a fan blade and a circulating pump. Water from the 3-gallon reservoir in the base of the humidifier is pumped to the top of the unit and forced through a water distributing ring which runs around the top of the unit. The water then streams out through holes in the distributing ring, falling through a fibrous filter, thereby creating what is in effect, a circular waterfall. It is through this curtain of falling water that air is drawn by the motion of the fan.

As air is drawn through the waterfall, all dust, dirt, pollen, smoke and other impurities are washed and filtered out—and the air, as it emerges from the top of the unit, is crystal clear and properly humidified.

The unit disperses 13,000-cu. ft. of washed, moisturized air per hour. The pump forces a never-ending stream of water down through the filter at the rate of 60 gallons per hour.

## *Illustrated Safety Book*

How to avoid injury and what to do for those injured in home or factory are subjects covered in an interesting illustrated 20-page booklet published by Allegheny Ludlum Steel Corp., Public Relations Department, Pittsburgh 22, Penna.




## Book Increased in Price

H. Behlen & Bro., Inc., 10-12 Christopher St., New York 14, N. Y., advises that the new edition of its book, "The Art of Wood Finishing," (72 pages 6x9-in.) has been raised to $1.85. A news item about this book in March issue, page 114, named a different price.

## Stops Leaks Instantly

A free copy of the Stonhard folder gives complete information how to seal water-seepage or leaks in practically every type of masonry construction—from dams to tunnels, from basements to elevator pits. Write to Stonhard Co., Dept. IF, 403 N. Broad, Philadelphia 8, Penna.

## Polishing Discs and Wheels

A new illustrated bulletin covering sheepskin discs and wheels has been issued by Divine Brothers Co., 200 Seward Ave., Utica 1, N. Y. This bulletin gives valuable specification data, recommended uses, and the various forms available for polishers' use. The different qualities of sheepskin are also discussed.

## Metal Decorating Oven

Young Brothers Co. (Industrial Ovens) 6500 Mack Ave., Detroit 7, Mich., announces publication of Bulletin 7-L, covering all of the latest features of its new metal decorating ovens.

While the type of oven described in the bulletin was developed by Young Brothers Co. over the past 27 years, primarily for the metal decorating industry where finishes are applied to metal sheets by roller coater or press, the oven is also finding extensive use in other industries for such applications as drying and curing of gypsum and asbestos building boards; baking and curing of paints and impregnants, and plastics; also for practically all heating applications for flat stock.

## Vita-Lux Enamel Folder

An attractive colorful 6-page folder gives information about the new Vita-Flux white enamel, a product of Vita-Var Corp., Newark, N. J. The new enamel is durable, tough, non-yellowing, fast-drying, washable, and resistant to moisture, gas and fumes.

## Metal Decorating Ovens

An 8-page bulletin, 8½x11-in., printed in two colors, contains information and illustrations that refer particularly to ovens for use in the metal decorating trade. Sectional titles include oven zoning, recirculation, rapid heating, oven safety, conveyor, control, and others pertaining to oven installation, operation and maintenance. For a free copy, address Young Brothers Co., 6500 Mack Ave., Detroit 7, Mich.

## Air Filter Bulletin

A 2-color, 8-page bulletin describes a line of Staynew dry-type intake air filters for all types of air compressors, engines, blowers, motors and generators. All the filters described in this bulletin feature the orginal radial finned insert design. Copies can be obtained from the Dollinger Corp., Rochester 3, N. Y.

## Product Design in Full Color

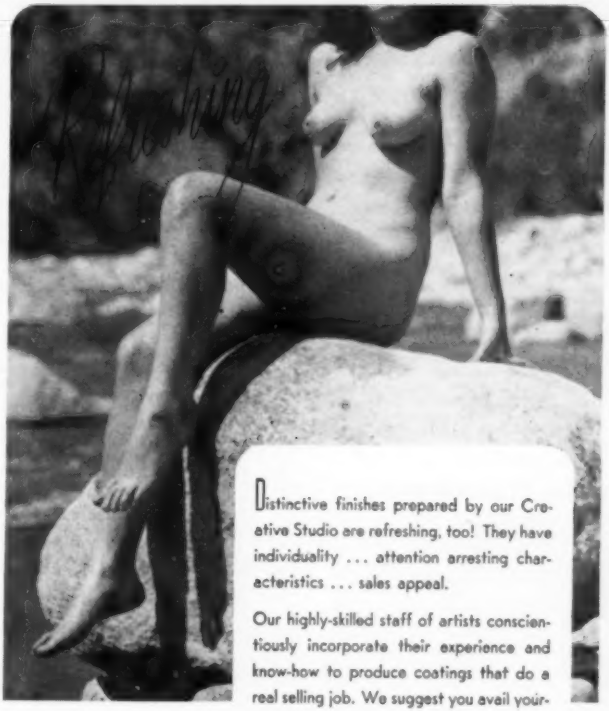
The product designing firm of Barnes & Reinecke, Inc., 230 E. Ohio St., Chicago 11, Ill., has produced for free distribution a 4-page, 4-color french-fold brochure entitled, "Design Increases Sales."

You will be interested in seeing the design revolution that has taken place in recent years in both consumer and industrial products. Recalling what the photographs in this brochure might have looked like only ten years ago, you will readily admit that product, package and machine designing, engineering and building have taken great strides in the past ten years.

## Book on Fire Retardant Wood

The Wood Preserving Division of Koppers Company, Inc., Koppers Building, Pittsburgh 19, Penna., has issued a new 12-page booklet on the subject of fire retardant wood.

The booklet discusses "fire hazard"




Distinctive finishes prepared by our Creative Studio are refreshing, too! They have individuality ... attention arresting characteristics ... sales appeal.

Our highly-skilled staff of artists conscientiously incorporate their experience and know-how to produce coatings that do a real selling job. We suggest you avail yourself of their creative abilities.

Reputable firms are invited to send samples to be finished ... no cost or obligation.

*No Tampering with Quality*

ROCKFORD VARNISH *Company*
ROCKFORD ILLINOIS

*Manufacturers of Protective and Decorative Coatings*

ratings of various building materials, the evolution of fire retardant treatments, Underwriters' Laboratories test of fire retardant wood, and methods of treating wood to make it fire retardant, and lists applications in which fire retardant wood is of special value.

It also contains information on, and pictures of, actual cases where fire, originating in inflammable materials, was held in check by the fire retardant wood, and pictures of burning tests and standard specifications for fire retardant treatment with the new CZC (FR), developed by Koppers.

## New 8-Page Brochure on Sterling Sanders

A new 8-page brochure, covering the applications and operation of the Sterling 1000 Portable Electric Sander and the Sterling Speed-Bloc Portable Air-Driven Sander, has just been released. Also included is detailed information on the complete Sterling Sanding Kits; illustrations and prices of the various accessories; and a listing of the 17 Sterling Sander service depots in the United States and Canada. The brochure may be obtained by writing to the Sterling Tool Products Co., 1340 No. Milwaukee Ave., Chicago 22, Ill.

## Hercules Products Book

A new Hercules Powder Co. products book, which classifies all of the company's chemicals by family groups, is now available. Approximately 100 chemicals are described in the new book which is attractively illustrated.

Included among the products listed for the first time are Abitol, hydroabietyl alcohol; Celloiyns, a series of resins specially designed for lacquers; Dresinols, a series of resin emulsion containing 40% to 45% solids; and other new resins from rosin.

All of the products lists are briefly described as to chemical makeup, uses and potential applications. Hercules' address is Wilmington, Delaware.

## Catalog of Testing Instruments

A new illustrated catalog, published by the American Instrument Co., Inc., of Silver Spring, Maryland, describes numerous scientific instruments for use in chemical testing laboratories.

Detailed descriptions of hundreds of instruments makes this new Aminco Catalog 48 a valuable guide for the selection of scientific instruments for research, testing, and quality control. A copy will be sent free of charge to laboratory workers requesting it on business or professional stationery, giving name, title, business affiliation, and complete address including postal zone number.

## Corrosion Preventatives

A new specification sheet on Corrosion Preventatives has been prepared by the Aviation Chemicals Division, R. M. Hollingshead Corp., Camden, N. J.

This sheet lists the various types of Corrosion Preventatives, identifies them by their U. S. Government designations, describes their characteristics, lists their uses, explains the methods of application and removal and, finally, specifies the protection requirements for each type.

While Hollingshead naturally has listed the appropriate type of its own product, "Klad Kote", alongside the Government designations, this specification sheet is a real contribution to the technical literature on the subject of Corrosion Preventatives.

## New Buffing and Polishing Booklet Free

Fabricators and manufacturers in the metal-working industry, interested in improving buffing and polishing operations, will find the new, 2-color, 20 page book, just published by The Buckeye Products Co., Cincinnati 16, Ohio, filled with valuable reference data on polishing, buffing and coloring compositions and their use.

As an aid to polishing room foremen, purchasing agents and all concerned with finishing room operations and supplies, the book contains a full-page chart showing the correct polishing, buffing and coloring composition for each particular metal surface. Complete descriptions of the working qualities and practical applications of various types of compositions, and Chrome, Greaseless Compositions, including Tripoli Nickel, Stainless Steel Emery Cake and Grease Stick and the popular "Spray-It" Liquid Compositions, are presented.

Convenient too, is a section on many types of quality buffs and polishing wheels. Each is illustrated and described and its application to a specific operation in the buffing room is given.

## Production Planning Brochure Free

Checking or reversing the sharp and still continuing rise in break-even points is of direct concern to every business. Sixteen practical lines of attack on break-even points through methods of reducing costs and increasing production are outlined in a new, illustarted brochure available from Remington Rand Inc.

These are specific, tested procedures that are based on case history experiences of successful operations. They include suggestions that can be adopted directly or adapted to fit special requirements of manufacturing, purchasing, planning and scheduling, and stores departments of large and small companies alike. They

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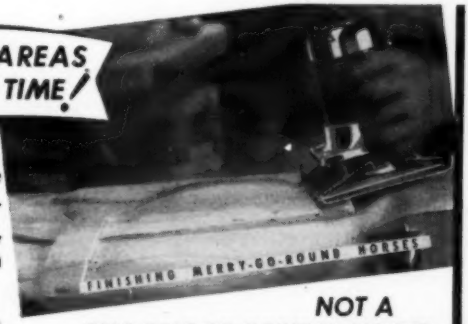


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are realistic attacks on rising break-even points through effective, down-to-earth methods of avoiding production delays and forestalling bottlenecks that raise break-even points unnecessarily.

Copies of this brochure KD 367 can be obtained from any office of Remington Rand or by writing to Systems and Methods Research Department, Remington Rand Inc., 315 Fourth Ave., N. Y. 10, N. Y.

## Protective Oil Coating Prevents Rust

Oakite Products, Inc., 132F Thames St., New York 6, N. Y., announces publication of a new Service Report that gives helpful data about an Oakite Special Protective Oil, a specialized material designed to furnish efficient rust-protection of metal parts in production, in storage, or while awaiting shipment.

Oakite Special Protective Oil is a semi-permanent, rust-preventive oil of extremely low viscosity which displaces water, frequently eliminating the necessity of a drying operation, and imparts a thin, protective film to iron and steel surfaces, resisting moisture, humidity, perspiration and acid fumes. Metal surfaces treated with this material and subjected to rigid humidity and acid-fume tests, show no evidence of corrosion, it is reported.

The Service Report provides the latest data available on this specialized rust-preventive material, and incorporates an interesting flow chart showing strategic points in the production process where Oakite Special Protective Oil supplies effective anti-rust protection.

## A.S.T.M. Standards on Paint, Varnish, Lacquer, Etc.

The latest compilation of A.S.T.M. standards on paints and related products, issued early in 1948, gives more than 170 specifications, tests, and definitions in their latest form. Comprising 580 pages, the book should be of interest and service to all those concerned with the materials covered.

There are 45 specifications covering various types of pigments—white, black, mineral iron oxide, blue, green, yellow and orange, red, metallic, etc. An important phase of the Society's work in this field, which is carried out through the activities of technical Committee D-1, is the development of test methods and 26 of those given cover various types and properties of pigments. These include chemical analysis, absorption, specific gravity, tinting strength, etc.

Nine specifications and five test methods relate to drying oils, paint driers, and thinners; and 12 cover shellac, varnish, and varnish materials. In the field of lacquer and lacquer materials, there are 21 specifications and 11 test methods.

Copies of this book, in heavy paper cover, can be obtained from A.S.T.M. Headquarters, 1916 Race St., Philadelphia 3, Penna., $4.35 per copy.

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## Free Tumbling Barrel Bulletins

Four new 2-page bulletins have been issued by Lupomatic Industries, Inc., 4510 Bullard Ave., New York 66, N. Y., which illustrate and describe tumbling barrels of several types for cutting down, deburring, burnishing and polishing metal and plastic parts.

These bulletins also describe compounds and give general recommendations for the compounds to be used for ordinary wet or dry tumbling processes.

A separate bulletin has been issued which gives complete processes and suggestions for proper compounds and carriers to be used under certain conditions of finishing work on metal and plastic parts.

## Mico-Silicone Base Enamel

A 4-page folder, printed in three colors, gives facts and figures about the heat resistance characteristics of Mico Aluminum coatings which, when properly applied, resist heat up to 1000° F. In addition to the aluminum color, these Silicone-base coatings are available in black, red, orange, yellow and green, but the colored enamels have slightly less heat resistance—up to 500° F. A copy of the folder can be obtained from Midland Industrial Finishes Co., Waukegan, Ill.

## Rust Preventative Compounds

A new, 14-page booklet gives general information on 23 removable rust-preventative compounds. All compounds are classified, and brief comparisons are made of the compounds in each group. In addition, methods of application, thicknesses and permanency of coatings, and removal of the coatings are discussed.

Use of these products cover metals in storage, indoor and outdoor; parts between manufacturing operations; machinery, parts, and metal surfaces both domestic and for export.

To obtain a free copy of this booklet, write Freedom-Valvoline Oil Co., Dept. 24, Freedom, Penna.

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# Industrial FINISHING Editorial

## Approach to Cost Reduction

Production costs are admittedly high. Certain cost factors such as wages, raw materials, supplies and taxes are beyond the control of the individual manufacturer. From the sales standpoint, the picture presented is not rosy. To offset high production costs, there is always the danger of pricing the product out of the market.

At no time in industry's long history has the need been so great to improve work setups to offset high costs and high prices. There are faster methods, faster materials and improved devices for doing the job. It will require intensive thought and study. Plans must be well laid. Perhaps a re-design of the product will tend to cut some of the sharp corners of high cost.

First, a complete picture and resume must be made of present products, production methods, handling of work in process and parts, with individual operation costs broken down. These should be based upon careful time and motion study by someone competent for such work.

After an ingathering of all of the facts—not theories—a comprehensive study may be made of present methods, equipment and costs by a group of the best minds in the organization. It may be necessary to call in outside help such as an industrial designer or an industrial engineer to contribute his knowledge to solving the problem. Rearrangement of present equipment may be in order. For some operations, new improved equipment may be required. A changeover to new materials going in to the finished product may be necessary.

Before any actual changes are made the new setup must be fully outlined and then even more intensive study should be made to determine the relative value of the changes as cost-reducing factors. With few exceptions, there is always a better way of doing the job. Industry's problem is to find that way. Under present conditions, this is about the only means of reducing costs.

---

## Save The Eyes

Too much attention cannot be focussed on the conservation of eyesight. Both management and workers must be made to place the proper value on good vision.

There are a few simple rules which if adhered to "will conserve America's seeing skills and ultimately improve public health, safety and industrial efficiency", according to the American Optometric Association.

These rules, given by the association's public health bureau are: Intersperse period of close work with changes in the object of attention; guard general health, because seeing requires coordination of several organs of the body; provide ample illumination at home and at work; watch posture; never read or sew when reclining; wear eye protective devices when there is danger of eye injury; and obtain a visual analysis periodically to assure efficient vision.

Management can do much to aid the worker in conserving sight by providing adequate illumination for the

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The Dust-All Tack Rag comes in the characteristic *Red Checkered Bag.*

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particular work to be done; posture chairs or stools of correct height so that the work will be at the proper distance from the operator's eyes; and shatterproof goggles for jobs that are dangerous to the eyes.

On the other hand, it is the worker's duty to follow the rules, and to take advantage of the facilities management provides, for after all he is the one who should be most concerned. It is well to remember that what you now have is the only pair of eyes you'll ever have. Sight is irreplaceable.

## *Learn More to Earn More*

People in the United States have become definitely education conscious. Practically all schools and colleges are overcrowed with students. The trend toward knowledge is reflected in industry—in fact, in all business—manufacturing, jobbing and retailing; and it includes executives, salesmen, supervisory employees and workers. In most cases modern improved methods of education are employed, such as charts, graphs, pictures, illuminated slides and motion pictures with sound.

One executive of a large mid-west plant employing about 7,000 people said: "The only way to teach employees is by modern methods. Get your story over with charts and movies. Men and women who work don't want to pack school books and study. They don't want to go back to the little red school house days."

Well, that statement may be open to discussion. Some of them never did want to go to school or study, but there are thousands of people who would have gone to school and put in long hours of study if conditions and circumstances had not forced a change in their plans. Other thousands, recognizing their youthful error in quit-

ting school too soon, would be glad to do a reasonable amount of studying, especially if their self improvement would mean a better job and more pay.

The main point to bear in mind is that modern educational methods of visual teaching are excellent, and they should be employed to the fullest extent. But to depend upon visual teaching alone, especially for the adult mind, is a fallacy. To retain what is taught, there must be some study. Even in education there is no substitute for hard work.

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## Color Mixing—by User or Supplier?

Does your production warrant a color mixing setup or department? If your product is such that finishes and colors are few and fairly well standardized, or if color changes are infrequent, then you may not need such a department.

On the other hand, if your finishing room is called upon to coat many different kinds of products, such as in a custom or job shop, or if your product is subject to special color specifications submitted by your customers, then a color-mixing department is highly desirable—and it will be economical.

Suppliers of finishing materials are always eager and willing to cooperate with their customers. Producing special finishes or special colors in ordinary finishing materials, in less than drum lots is very expensive, Many times the supplier bears a share of this cost because it is excessive. If he charged the customer with the entire cost, plus his normal mark up, the price would be prohibitive. Such conditions could not continue long, or the supplier would lose the business.

Where diversified finishes, or frequent color changes are required, a

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Non-injurious to hands or metal.

*Write for sample and quotations, or order 5 gallons at drum price.*

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**5 Gallon BLUE BOY Model**

**PAINT REJUVENATOR**

Restores Paints, Lacquers, Enamel Products and Pigment Primers, to original consistency in 3 to 10 minutes without opening the can. Available for Round or Square 5-gallon cans. Explosion proof electrical equipment if desired. Also other units from ¼-pint to 50-gallon drum capacity available. Originators of Paint Rejuvenating Equipment—ten years—thousands of satisfied users.

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color-mixing department will prove both profitable and convenient. Basic finishing materials and various colors ground in oil may be purchased from suppliers. Then the finishing material in the correct color can be mixed in advance and marked for the particular job. When it is needed, it will be ready for use.

## Designers Should Consult Finishers

★ The keystone of American industry has always been founded upon cooperation or team work. Many people believe that our almost universal interest and participation in sports instills an instinct for co-ordination which is carried into our business life. However that may be, it is not to be denied that our marvelous mass production could hardly be achieved without a high degree of team work. Management, sales and manufacturing must plan together; materials and operations must flow together in the most efficient sequence to become the completed product.

It is the function of engineering to design the product and, by cooperating with the departmental key men, to plan the various operations to attain a minimum waste of time or material. It is often necessary to modify the original design to accommodate various factors, or to meet the limitations of the machines available.

There is one place that could stand a little more cooperation in most industries. That is between engineering and painting. No designer, worthy

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**INDUSTRIAL APPLICATIONS OF INFRARED**

By James D. Hall, Advisory Engineer, Westinghouse Electric Corporation. 198 *pages*, 140 *illustrations*, $3.50. This new book shows you how to employ infrared radiation for better and more economical surface-finishing—for paint drying, metalworking, wood finishing, foundry molds, and for many other industrial heating processes. It describes what equipment is available, how it operates, and where to use it. Here is a thorough, easy-to-understand guide-book on modern heating technique.

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of the name, would specify a material that the concern couldn't get, nor any operation for which no machine was available. He would attain the end desired by a different means. However, some designers will specify a part without any regard for the dimensions or limitations of cleaning tanks, conveyors, ovens or other painting equipment.

Units are assembled, in whole or in part, but they may have dead-end compartments or blind recesses. Apparently the designer gives no thought to, or has no knowledge of, the difficulty of getting the specified paint coating on them.

Many concerns let out contracts for sheet metal and other parts to outside fabricators who, in turn, have them finished by a third party. Beyond assigning a stock specification to the product, the customer may not give very definite instructions to the fabricator, who is, more often than not, unfamiliar with finishing problems. His procedure is usually to finish his part of the job and hand it over to the finisher to work out as best he can.

I have in mind a massive cabinet, designed by the engineers of one of the communications industries. Compartments within compartments; a labyrinth of narrow passages; it was really a masterpiece of intricacy. The specifications read, "All surfaces must be covered, thickness .001 to .0018-in., free from runs, sags or overspray."

In another case, it was pointed out that reducing the height of a cooling unit case by ½-in. would double the baking oven capacity which was sorely needed. Although no one could offer a single objection to the idea, it has never been done. Engineers might find the finisher one of their most valuable sources of ideas for improving the product and cutting costs. Why not use him?—G. A. CONRAD.

## Men's Desire to Smoke Solved in This Plant

★ In most manufacturing plants the problem of smoking by employees is a major one. It is not only dangerous because of the fire hazard, but insurance companies are very strict for enforcement of non-smoking rules, especially in some kinds of factories. In the finishing room it is very dangerous, more so if lacquers are used.

Faced with this problem, we tried appealing to our employees from a safety viewpoint. It was simple to prevent smoking in the plant, but we found the men were smoking in the rest room. From a fire hazard standpoint this was not dangerous, but the room was constantly filled, and men who wished to use the rest room facilities were hindered and kept from their work for an extended time. Discharging employees for breaking rules curtailed some smokers but drove the rest to slipping. This was not the answer.

If we allow the men to smoke in a safe area, we definitely have morale, good will, and cooperation. If we do not allow some smoking we have complaints accompanied by smoldering and suppressed resentment.

Our problem was to provide a safe smoking area where the men would be free to smoke and relax for a few minutes during the day, without fear of being fired if caught. Firing men who are skilled at their work is something like junking good productive equipment. Like many problems facing management today, there is more than one way to handle a matter that deals with personality. The best way usually requires planning and foresight.

It so happened that a fireproof locker room joined the men's rest room. We decided to clear the room and allow smoking for two hours in the morning and a similar length of time in the afternoon. We were aware of the problems of loafing, in spite of opinions that all men are honest and wish to do the right thing when given a chance.

To protect those workers who appreciated the privileges given them, and to exercise some control over spending too much time in the smoking room, we issued smoking cards and requested men to smoke no more than ten times a week and to limit

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their time to ten minutes a smoke. A punch clock was provided near the room and an attendant was there to check on smokers and keep the smoking and rest room clean. These smoking cards are checked at the end of the week and those cards that are "out of line" are given to the foreman for checking. Needles to say it is a rare individual who has to be told twice.

The attitude of the men has changed to one of respect and appreciation for the company, which has shown that it is aware of their personal worth. It is this favorable attitude of labor for management that any organization should guide carefully. Attitude is not a thing that is built in a day or a year. The attitude of the men is leaning in one direction or the other. The leaning may be noticeable or not, but it is there.

So long as our industrial system includes labor and employer, the workers' leaning is bound to be away from management unless intelligent and persistent care are taken over a long period of time to insure a favorable attitude. An organization can be made immune to trouble makers, just as human body can be made immune to a disease.—H. H. CONNELLY.

## *Color—Something You Need to Know About*

★ For a while, there may be a tendency to over-emphasize color, now that we are beginning to understand its importance. The industrial finisher will scarcely need to give it a major portion of his time, nor will he require an assistant in charge of color to handle the details. Yet he cannot afford to dismiss the matter entirely. The rainbow has come into modern life in a big way, and few kinds of selling will be exempt from its strong influence.

In spite of the accumulated knowledge on the subject, most authorities agree that we have only started to learn. So this is a good point to begin a leisurely study of a field with few equals for absorbing interest. At the same time, the industrial finisher

will be gathering the kind of facts about color which he will have to know sooner or later.

Where to go for information, at least in the early stages of the study, is no difficult question. Magazines have turned to the effects of color with the whole-hearted enthusiasm they show toward all new ideas. Your local library can help you find recent material.

Even more valuable, because they have been written with an understanding of industry's problems, are the booklets furnished without charge by some large suppliers of paints and enamels. At least two manufacturers already have provided material quite suitable for an elementary course in color and its industrial applications. Other companies will probably add to the list.

By starting now to accumulate articles from current magazines, and booklets from suppliers in the field, you can secure a working knowledge of color with almost no investment. While this information will be of great value from a business standpoint, the study of color just as a hobby will be equally interesting.

The whole subject of color has advanced far beyond merely deciding what you personally like or dislike. Even if you do not care to rate as an expert, some background training on color will be helpful in determining when you should bring in a consultant, and what you may reasonably expect such a move to do for your sales.

Be on the lookout for material worth keeping for present and future reference. Much of it is too valuable to be passed up, or to be read once and then discarded. The industrial finisher who understands color and its effects, and who uses this knowledge wisely, has an advantage in many of the decisions he is called upon to make.—M.D.G.

**SAFEGUARD YOUR SPRAY BOOTHS**

**Layers of inflammable paint come off more quickly if you have applied Wyandotte Spray Booth Coating first. Only a thin coating makes cleaning easier, speedier, more economical.**

**And you can reduce your floor-cleaning costs with Wyandotte F-100*. Even heavy soil stands no chance against this remarkable compound.**

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***Registered trade-mark**

**ELECTRO COLD STRIPPER**

- Cleanly and quickly removes all paints, enamels, synthetics or wrinkles. The finish literally "pops off."
- Permits refinishing in minutes—not hours. Especially effective on hard-to-remove baked-type finishes.
- Non-inflammable. Non-injurious.

*Write for sample and quotations, or order 5 gallons at drum price.*

**ALLIED FINISHING SPECIALTIES CO.**
2641 W. Grand Ave., Chicago 12.

## *Oldtime Foreman—and Those Today*

★ Today's foremen and supervisory employees are a far cry from those of the 1900 to 1930 period. Where the old boys of the early 1900's used brawn and muscle to instill fear into men working in some factories, the modern foremen and supervisors use brains and a knowledge of human nature to encourage confidence and cooperation on the part of their men. A word of confidence, a cheery, "Good morning, how are Mary and the kids", has now taken the place of a look or a voice that said, "Get going, you bum!"

The results of management encouraging teamwork and departmental cooperation on the part of employees are shown by the many new ideas for increasing shop productivity, efficiency and safety. Although it is said "there is nothing new—only a new way of maneuvering an old thing", I feel sure that modern methods of finishing merchandise would not be developed to the present state, had it not been for some one or more cooperative employees in the industry suggesting or applying a new twist to an old idea.

Under the iron rule of a department tyrant many an employee would be happiest when he saw inefficiency, negligence and noticeable losses to his boss's business. Today's and

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## Random Comment on the Industrial Scene

*(Continued from page 8)*

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